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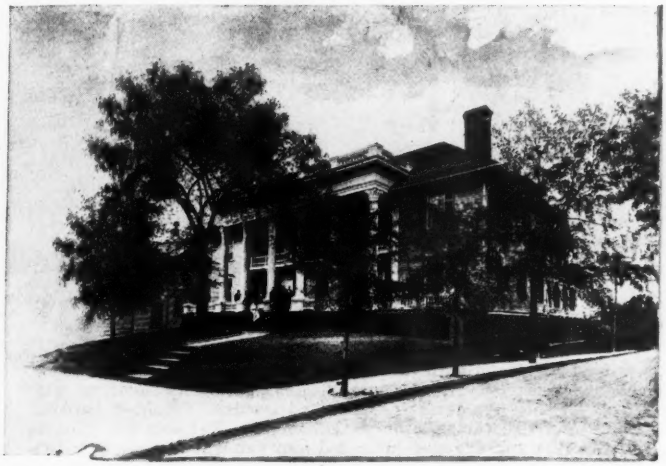

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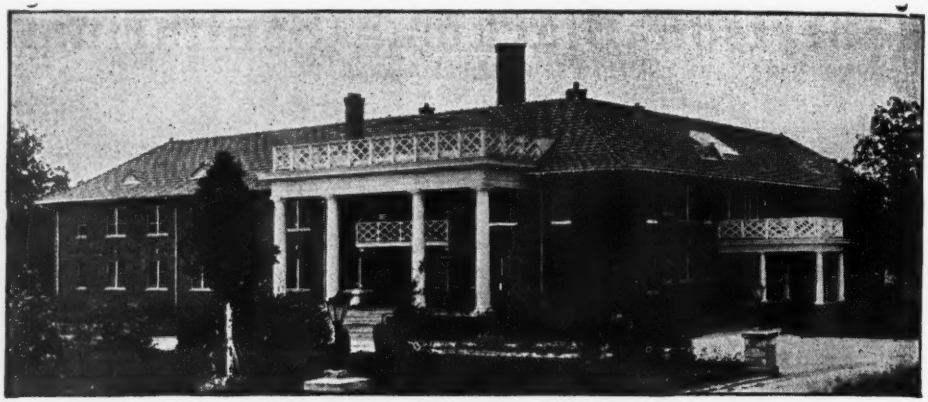

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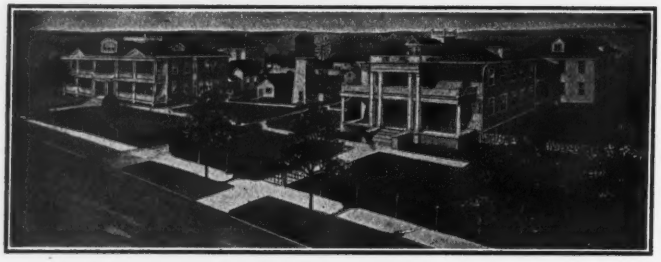

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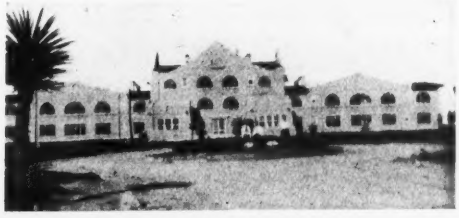

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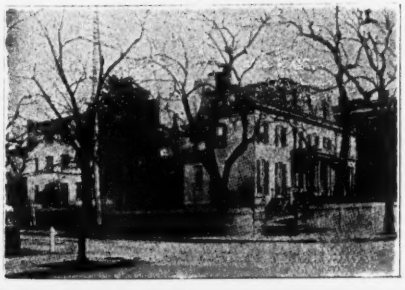

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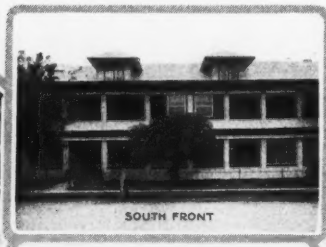

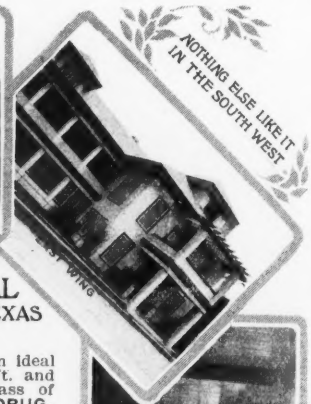

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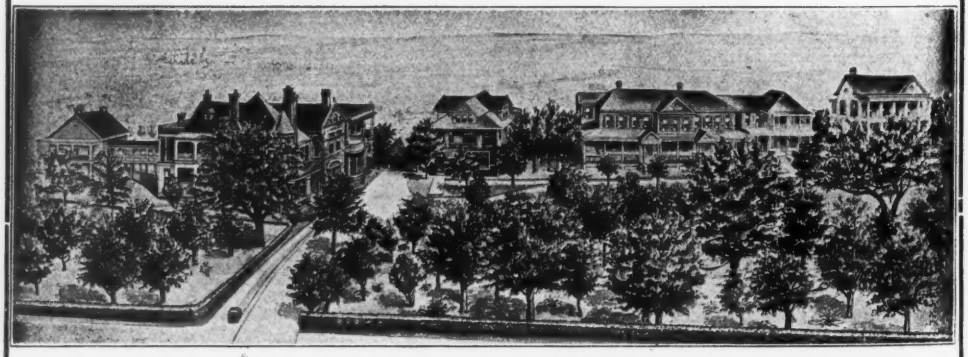

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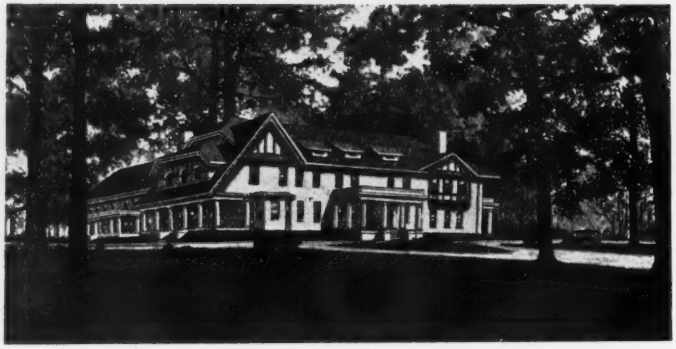

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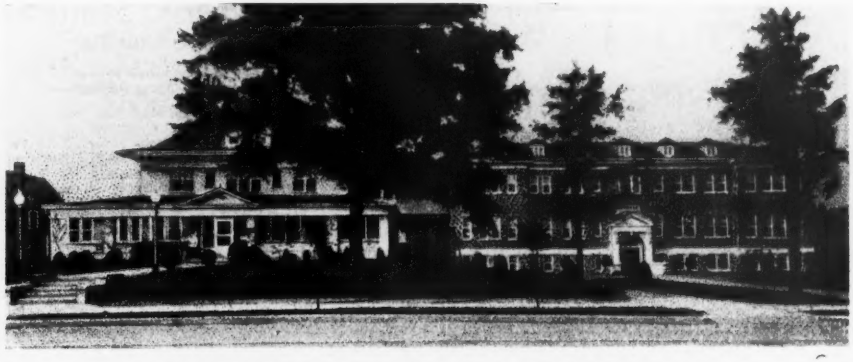

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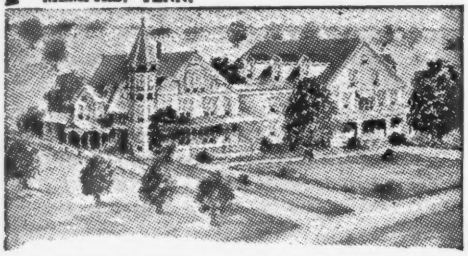

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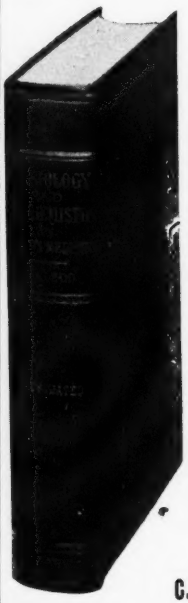

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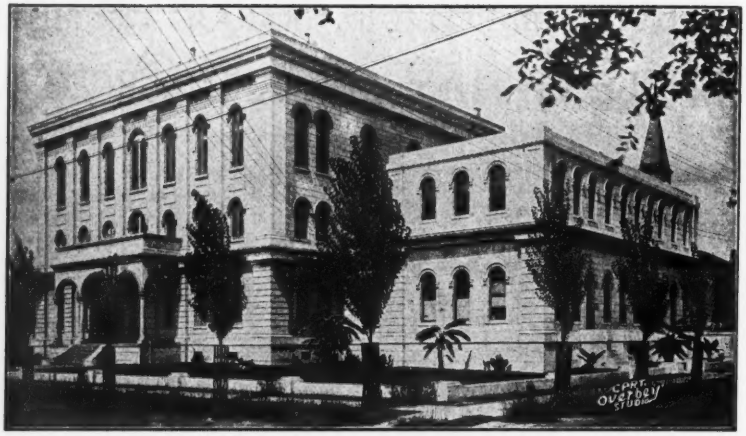

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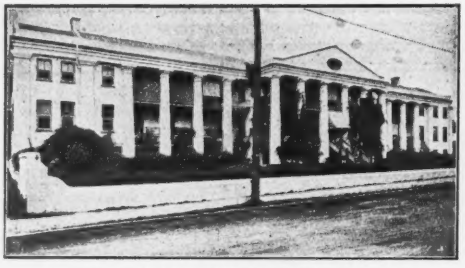

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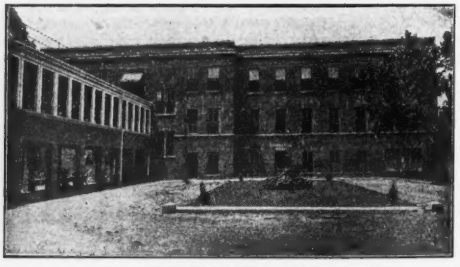

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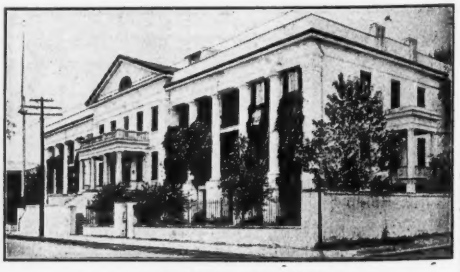

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"	C	"	0.01	"	"	"	"
"	D	"	0.02	"	"	"	"
"	E	"	0.04	"	"	"	"
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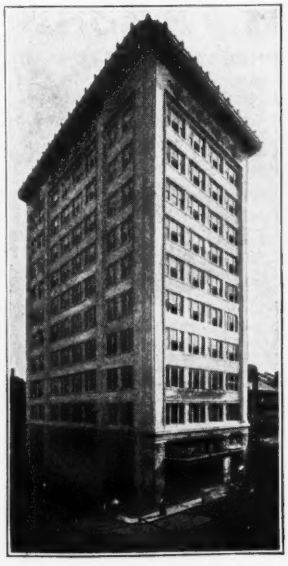

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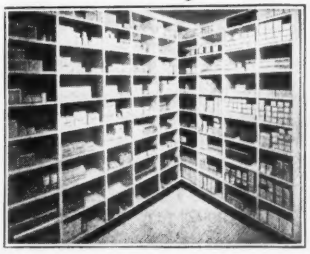

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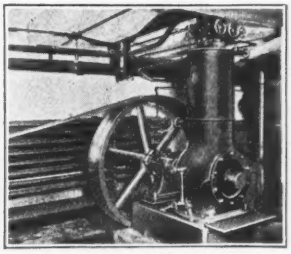

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Volume XII APRIL 1919 Number 4

MEDICINE

INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.

TYPHOID AND PARATYPHOID FEVERS

INTRODUCTION

In view of the appearance and continued incidence of fevers of the typhoid-paratyphoid group in many units of the American Expeditionary Forces during the past five months, it is deemed essential to review this subject at the present time, particularly from the viewpoint of early diagnosis, prevention and control.

The occurrence and distribution of typhoid-paratyphoid in our troops has constantly and continuously been brought to the attention of all medical officers serving with the American E. F. through the medium of the Weekly Bulletin of Diseases. It would appear, however, that many officers have utterly failed to grasp the significance of these reports and warnings, a fact which may be due to a false sense of security under the popular belief that vaccination against typhoid and paratyphoid gives a complete immunity even in the midst of gross unsanitary conditions.

Notwithstanding the fact that typhoid and paratyphoid fevers are endemic in the United States, and in spite of our extensive experience with these diseases during the Spanish-American War and later during the period of mobilization on the Mexican border, it is evident that many medical officers have gained but little knowledge of the fundamental principles underlying prevention and control. It is also quite evident that some medical officers are grossly careless and neglectful of their duties and responsibilities as medical officers and sanitarians.

This office realizes fully that the United States has raised, within a short period of time, an army of several millions of men who have been poorly instructed in personal hygiene and sanitation; it realizes that 2,000,000 of these men have been brought to France, where they have encountered environmental conditions differing entirely from those existing in the United States; it is fully recognized that military necessity has at times rendered sanitary control extremely difficult, especially during the stress of active combat.

To our regret, be it said, the high standards of sanitation and personal hygiene set by the Medical Department during the past ten to fifteen years have not been lived up to during the past one and one-half years. This has been due to a combination of factors the more important of which have been the lack of facilities and materials, transportation difficulties and insufficient training and personnel. However, many medical officers serving with combatant and S. O. S. units have been able to overcome all handicaps and have by wise counsel and by eternal vigilance succeeded in keeping their units in excellent fighting trim.

The actual physical fighting is now at an end, and the time-worn excuse that

Extracts from Circular No. 69, issued by the Chief Surgeon's Office, American Expeditionary Forces, Tours, France, February 17, 1919.

"there is a war on" will no longer be tolerated. But the fight against disease still continues!

The greater part of the American E. F. is now relatively stationary in training areas or with the Armies of Occupation, where definite sanitary measures can be instituted and enforced, where instruction of the line troops can be carried out, and where opportunity is presented to initiate rules of personal hygiene. Medical officers will therefore be held responsible for the proper supervision of the health of troops.

Carbon copies of all general recommendations of medical officers covering sanitation and personal hygiene promulgated officially as orders and memoranda, by superior authority, will be mailed to this office.

SUMMARY OF TYPHOID-PARATYPHOID INCIDENCE IN THE AMERICAN EXPEDITIONARY FORCES

In order that all medical officers in the American E. F. may have a somewhat comprehensive view of the occurrence of these fevers in the American E. F., the following brief review is presented:

(a) From June 1, 1917, to June 1, 1918, but few cases occurred. The rate was well within the limits to be expected in view of the sanitary conditions under which the troops were of necessity living. The cases were sporadic and only occasionally did secondary cases develop.

(b) In July, 1918, a replacement unit consisting of 248 men from Camp Cody, N. M., reached England with typhoid prevailing extensively; 98 men, or 39.5 per cent., had typhoid, and the case death rate was 8.42 per cent.

It was evident from the investigation that the men were exposed to infection through contaminated drinking water while en route to the port of embarkation in the United States. The unit had been vaccinated a few months prior to the occurrence of the epidemic. Most of the patients presented the typical clinical features of typhoid. The percentage of positive bacteriological findings from the blood, feces and urine was low, as no laboratory work could be done until late in the course of the disease.

(c) In August, 1916, a small but severe epidemic occurred in a detachment of Engineer troops stationed at Bazoilles. In this unit fifteen cases of typhoid occurred with a death rate approximating 10 per cent. Typhoid was endemic in the civil population and the epidemic was very definitely traced to a cook in the mess of this Engineer detachment who remained on duty as a cook for five days after the onset of the symptoms. The epidemic was recognized in its early stages and in all patients the disease was confirmed bacteriologically by positive cultures from the blood and feces.

(d) During the Chateau Thierry offensive diarrhoeal diseases were very prevalent in the troops engaged (approximately 75 per cent). It was demonstrated bacteriologically, in this area, that the prevailing intestinal diseases were simple diarrhoea, bacillary dysentery, typhoid, paratyphoid A and B. The sick and wounded from this sector were evacuated to base hospitals in various parts of France. Very soon thereafter this office began to receive reports of cases of typhoid, paratyphoid and bacillary dysentery from base hospitals. In practically all instances the patients had been evacuated from the Chateau Thierry sector. The high incidence of intestinal diseases in this sector was due to the entire disregard of the rules of sanitation. "Military necessity" and the impossibility of supplying auxiliary labor troops, at that time, prevented immediate police of the battlefields. In some of the cases involved in this series the diagnosis of dysentery or typhoid was made by the pathologist at autopsy. The percentage of positive bacteriological findings was low, as the correct diagnosis, if made, was not usually arrived at until late in the course of the disease.

(e) Both dysentery and typhoid-paratyphoid fevers were demonstrated to have prevailed to some extent in our troops after the St. Mihiel offensive, but the epidemics of influenza and pneumonia prevailing at that time overshadowed all other medical admissions.

(f) Following the offensive in the Argonne sector, typhoid and paratyphoid began to be reported from practically all divisions engaged in that offensive. It is quite evident that the initial cases were due, in large part, to drinking infected

water. The initial cases, however, in large part were not, in most instances, promptly diagnosed and secondary cases from contact began to occur. In some divisions either the initial exposure was not great, the organizations were under good discipline, or the medical officers had a proper conception of their duties and responsibilities and but few cases occurred. In other instances the contrary was true and many cases have occurred. As examples of the two extremes may be cited the..... Division, in which 5 cases occurred between October 1, 1918, and February 1, 1919, and the .....Division, in which 115 cases occurred in the same period.

More than three hundred cases of typhoid-paratyphoid may be attributed to the Argonne offensive. Eight hundred and seventy-four typhoids and paratyphoids have been reported in the American E. F. since October 1, 1918. The percentage of confirmatory laboratory diagnoses has been low on account of the fact that the clinicians frequently failed to suspect the disease in its early stages.

(g) A small but severe epidemic occurred in the Joinville concentration area in December and January. In a group of Medical Department units (evacuation and mobile hospitals and sanitary trains) concentrated there 75 cases occurred with a case death rate of approximately 20 per cent. The cases were suspected in the early stages of the disease and the percentage of positive findings by culture of urine or feces has been greater than 75 per cent. The cause of this epidemic has not been completely analyzed as yet, but there is but little question that it was due to the use of infected drinking water.

CLINICAL DIAGNOSIS OF TYPHOID AND PARATYPHOID FEVERS

In view of the fact that the ordinary clinical picture of typhoid-paratyphoid is very frequently profoundly modified in vaccinated individuals, it is considered essential to enumerate briefly the usual clinical manifestations of these fevers, atypical modes of onset, differential diagnosis and modifications of the usual clinical manifestations in vaccinated individuals.

1. Clinical Manifestations of Typhoid and Paratyphoid.—Typhoid fever in the unvaccinated is commonly characterized clinically by symptoms due to the gradual development of a general bodily infection. The onset is insidious with lassitude, malaise, gradual step-like rise in temperature with slight morning remissions until at the end of the first week a continuous fever of from 103 to 105 degrees F. has been attained. The beginning of the attack is usually associated with anorexia, headache and frequently with diarrhoea, abdominal distress and epistaxis. The pulse is not increased in proportion to the temperature, is of low tension and dicrotic. The tongue is coated and white and the abdomen distended and tender. From the seventh to the tenth day the rash appears in the form of slightly raised, flattened papules of from 2 to 4 mm. in diameter, which can be distinctly felt, are of a rose red color and fade on pressure. These rose spots, characteristic of typhoid and paratyphoid, appear singly or in crops, usually first on the skin of the abdomen and lower thoracic region, but may occur only on the back or extremities. The individual rose spot persists for from two to three days, after which it fades, leaving a brownish stain which persists for some time. Toward the end of the first week the spleen enlarges and its edge can be distinctly felt below the costal margin.

At the end of ten days the symptom complex clinically characteristic of typhoid—continuous fever, rose spots and enlarged spleen—is usually established. To this should have been added laboratory findings of absence of leucocytocis and in the majority of instances a positive blood culture which occurs most frequently during the early stage of the disease. One negative blood culture will not suffice, but repeated examinations at 48 hour intervals will be made in suspicious cases.

During the second week there is continued high fever with slight morning remissions. The pulse becomes rapid and loses its dicrotic character, the patient becomes dull and stupid, the lips are dry, the tongue is dry and covered with a dirty brownish coat and tremulous. Abdominal symptoms when present, tympanites and diarrhoea, are more pronounced and the clinical picture becomes one of intense toxemia. In the third week, in favorable cases, the morning remissions in temperature become more marked, the fever be-

comes distinctly remittent in type and toward the end of this period a gradual fall in temperature by lysis is noted. Rose spots cease to appear. In severe cases the pulse is weak, ranging from 110 to 130, and pulmonary complications, especially pneumonia and hypostatic congestion, may occur. The patient is dull and apathetic and low muttering delirium and subsultus tendinum are common. During the fourth week convalescence begins, the temperature gradually reaches normal, the abdominal symptoms subside, the tongue becomes clear, and the desire for food returns. In severe cases convalescence may be delayed until the fifth or even the sixth week, in which case the fever continues high during the fourth week and it is only toward the end of this period that marked daily remissions make their appearance.

In individuals previously vaccinated against typhoid but who have completely lost their immunity, infection similar to that found in the unvaccinated occurs, giving rise to the symptom complex described above as characteristic of typhoid fever.

Infections occurring in the vaccinated individual who still possesses a certain degree of resistance to infection result in the appearance of atypical clinical pictures, such as abortive types of typhoid and paratyphoid in which the constitutional symptoms are mild with but slight febrile reaction of atypical type and few, if any, rose spots. The onset may be either insidious with headache, loss of appetite and fatigue, or acute and associated with chills, vomiting, intestinal cramps and diarrhoea. Fever may be wholly absent or evanescent in character and determined only if observations are made within the first 48 to 72 hours. A low type of temperature, with daily fluctuations of from 98.6 to 100.4, suggestive of the presence of tuberculous disease, may persist for a week to ten days. It is in this class of cases that blood cultures taken early in the course of the disease, and repeated if negative, frequently give definite information concerning the nature of the infection. Ambulatory types of typhoid are not uncommon and the first indication of the existence of the disease may be furnished by the occurrence of intestinal hemorrhage or perforation.

The vaccinated individual protected against general systemic infection may still act as a carrier of typhoid infection and frequently shows clinical manifestations of local disease of some portion of the gastro-intestinal tract while the characteristic symptom complex of typhoid fever due to general infection, namely, continued fever, rose spots and enlarged spleen, may be wholly absent.

2. Distinctive Complications.—Intestinal hemorrhage occurs usually during the third or fourth week. The onset is marked by a sudden and frequently pronounced fall in temperature associated with increased gravity of the general condition and a rise in pulse rate.

Intestinal perforation occurs usually during the third or fourth week. Patients whose sensorium is not too clouded complain of sudden paroxysmal abdominal pain, usually referred to the right hypogastric region. Signs of peritoneal irritation rapidly become manifest. Vomiting is common. Hiccough and irritability of the bladder with frequent micturition may be noted. Physical examination of the abdomen reveals tenderness and muscle rigidity most marked in the right hypogastric or iliac region. Obliteration of liver dullness is frequently present and constitutes an important sign. Acute abdominal symptoms associated with a suddenly appearing leukocytosis are indicative of perforation. The occurrence of intestinal hemorrhage or signs of intestinal perforation in an individual giving a history of previous ill health should always lead to the suspicion of the existence of typhoid.

3. Atypical Modes of Onset. (a) Acute onset with symptoms simulating meningitis. Lumbar puncture differentiates.

(b) Acute onset with intense, usually generalized bronchitis or symptoms suggestive of lobar or broncho-pneumonia.

(c) With chills, fever, vomiting, cramp-like pain in abdomen sometimes localized in right iliac fossa and suggesting appendicitis.

(d) With symptoms of acute nephritis. Attack begins suddenly with nausea, vomiting, pain in lumbar region, diminution in secretion of urine which is highly colored and contains albumin and casts.

(e) Special mention should be made of the ambulatory type of typhoid in which

the symptoms are slight, consisting simply of headache and lassitude associated with mild gastro-intestinal disturbances. The patient is at no time confined to his bed and intestinal hemorrhage or perforation may furnish the first clue with regard to the existence of typhoid.

(f) In the above atypical modes of onset early blood cultures are of importance in differentiation.

4. Paratyphoid Fevers.—The paratyphoid fevers due to infection with A or B organisms are evidenced clinically by the same general symptomatology as that of typhoid. They, however, as a rule, run a much milder course and the intense toxemia of typhoid, evidenced by marked apathy, muttering delirium and subsultus tendinum, is seldom present. The onset of paratyphoid is frequently more abrupt with acute gastro-intestinal symptoms resembling food poisoning. The intestinal symptoms are as a rule more marked in cases of infection with paratyphoid B than in cases in which paratyphoid A is the causative factor. The fever in paratyphoid is not of as long duration nor is it as continuous as in typhoid, but is more distinctly remittent in type. Enlargement of the spleen, rose spots and absence of leukocytosis are, as a rule, present in all three infections. Attempts have been made by some authorities to distinguish between the eruptions of paratyphoid A, paratyphoid B and typhoid. Thus the spots in paratyphoid A are said to be larger, more macular in type, of a darker reddish hue and to correspond more closely to the eruption of measles. However, histologically the rash is the same in all three instances and it is doubtful if a clinical distinction in type of eruption can be maintained. Rose spots may be wholly lacking or may be profuse and widely distributed over the body surface. The occurrence of relapses is more frequent in paratyphoid than in typhoid proper and particularly is that true in connection with Type A infections. In contradistinction to the relapse of typhoid that of paratyphoid is frequently more severe than the original attack. The distinction between mild typhoid, paratyphoid A and paratyphoid B can be made definitely only by the isolation of the infecting organism from cultures of the blood, urine or stools.

5. Differential Diagnosis — Influenza: Many cases originally diagnosed as influenza in the American E. F. have subsequently proven to be typhoid. The symptoms which the two diseases have in common are: continuous fever without localizing symptoms and slow pulse associated with absence of leukocytosis. The more abrupt onset, the intensity of the headache, the severe pain in the back and eyeballs and the early prostration occurring in influenza are distinctive. Supposed influenza in which the fever persists for more than four days and which is not associated with signs of respiratory involvement, such as a bronchitis, usually most extensive in the lower lobes, a broncho—or lobar—pneumonia, should be viewed with suspicion. It should be remembered that a general bronchitis is not uncommon in typhoid. The appearance of rose spots should determine typhoid. Intestinal types of supposed influenza should always be considered as possible typhoid until proven otherwise.

Acute Miliary Tuberculosis: A family history of association with tuberculous individuals, a personal history of previous attack of pleurisy or pulmonary hemorrhages, physical signs of old tuberculous pulmonary lesions, cyanosis appearing early in the disease associated with increased rate of respiration, a greater irregularity of temperature curve and a more rapid pulse with absence of dicrotism suggest acute miliary tuberculosis. Roentgenograms of the chest and blood cultures frequently give valuable differentiation.

Septicemia: In cases of late typhoid admitted to the hospitals during or after three weeks of profound toxemia, together with the, by this time, distinctly remittent temperature may suggest septicemia. The slight daily fluctuation in the general condition of the patient, together with the absence of chill and leukocytosis, suggest typhoid. Blood cultures will always be made in such cases and, if negative, cultures of the stools will be made for the presence of typhoid-like organisms.

6. Local and unexplained gastro-intestinal derangements, gastritis acute or chronic, diarrhoea, dysentery, gastro-enteritis, enter-colitis, colitis, appendicitis, cholecystitis, and acute catarrhal jaundice, all occurring with or without fever, should be regarded with suspicion when

admitted from commands in which cases of typhoid or paratyphoid have occurred, and examination of the stools for the presence of typhoid-like organisms should be made.

Medical officers will see that all cases of gastro-intestinal derangement enumerated above as well as all fevers of undetermined origin are subjected to careful clinical and laboratory supervision. They will under no conditions be left in quarters, but will be sent at once to camp, evacuation, mobile or base hospitals, where accurate observation of temperature at four hour intervals will be recorded for a period of at least four days. Blood cultures will be taken in every case of fever of undetermined origin in which the temperature has persisted for a period of 48 hours and if negative will be repeated, provided unexplained fever persists from the second to the fourth day.

Daily physical examinations of such cases will be made, special attention being paid to physical examination of the abdomen for enlarged spleen, distention and tenderness, either general or localized. A careful survey of the entire surface of the body will be made for the possible appearance of rose spots.

The precautions appropriate for a case of typical proved typhoid or paratyphoid fever must be observed in all instances where atypical or undetermined fevers are held under observation, awaiting clinical or bacteriological diagnosis of specific enteric infections. The frequency with which atypical, mild, unrecognized cases of typhoid and paratyphoid fever have occurred in the American E. F. among vaccinated men makes it absolutely essential to surround all such cases of undetermined fever with the same precautions which it is found necessary to apply to established typhoid or paratyphoid patients, to avoid contact infections in the wards among other patients and hospital personnel.

7. Temperature records, clinical notes and the original reports of laboratory findings in all cases of typhoid, paratyphoid, fevers of undetermined origin and the above mentioned list of gastro-intestinal disorders will accompany the patient if transferred to another medical unit and will be preserved and forwarded to the Office of the Chief Surgeon as per instructions contained in Section VI, Par. 6-7, Sick and Wounded Reports for American E. F., September 15, 1918. In no instance will the clinical notes, temperature and laboratory records of these cases be destroyed upon the completion of the case.

LABORATORY DIAGNOSIS OF TYPHOID AND PARATYPHOID FEVERS

Bacteriological procedures are of great value (1) for the certain and early diagnosis of suspected cases, (2) to determine carrier state in convalescent positive cases, (3) to detect carriers in otherwise normal individuals.

Blood cultures offer the most certain method for early diagnosis of undetermined fevers, and it should be kept in mind that the earlier in the disease the blood culture is taken the more likely is the result to be positive; thus, in positive typhoid fever, the chance of successful blood culture declines from 90 per cent. during the first week to 40 per cent. during the third week. In paratyphoid "A" fever, because of the frequently short and mild febrile period, the prompt and early blood culture is all the more necessary. Relapses are more common in paratyphoid than in typhoid, and taken at such a time, blood culture yields positive results in every case.

The following method of blood culture is recommended as being suitable in all cases of fever of undetermined etiology.

(a) When laboratory facilities are at hand, take 10 c. c. of blood from a vein at the elbow. Place 3 c. c. in each of two flasks containing 100 c. c. of plain broth. Place 1 c. c. in tube of agar (melted and cooled to 45° C), immediately mix and pour plate. Place remainder of the blood in dry sterile test tube to separate serum for such serological tests as may be suggested.

The two flasks and plate are incubated and examined the following day. Transplants are made to plain agar slants, or better, Russell's double sugar agar. In case of development of gram-negative motile bacilli or agar slants, emulsions should be made and agglutination tests done with immune sera for final identification.

Frequency of non-agglutinability of recently isolated typhoid cultures should be kept in mind. Negative blood culture in

suspected typhoid fever means little. Repeat if clinical conditions indicate.

(a) If the blood culture specimen can not be taken directly to the laboratory, filtered sterile ox bile is most useful, 5 c. c. in a tube. To such sterile ox bile 5 c. c. of blood is added, the tube closed with a sterile paraffin cork, carefully packed and sent for examination to the nearest laboratory. Bile medium is furnished in Chest No. 1, Transportable Laboratory, United States Army, Expeditionary Force Model. Additional supply of this medium may be obtained as needed from Central Medical Department Laboratory, A. P. O. 721.

Bacteriological examination of the feces is second only to blood culture as an important means of positive diagnosis. It is especially important in paratyphoid "B" fever.

Typhoid or paratyphoid carriers. Typhoid and paratyphoid patients excrete the bacilli, frequently with their urine and practically always in their feces. This is most likely to occur during the third and fourth week of the disease, the condition may persist throughout convalescence and not infrequently longer. It is, therefore, important not to release the convalescent typhoid or paratyphoid fever patient until he ceases to excrete these bacilli.

Three negative cultures of the urine and feces at six day intervals should be required before release of patient, the first not earlier than one week after temperature curve has become normal.

Some persons who have never had a clinical history of the disease may excrete typhoid or paratyphoid bacilli. It is important to detect such carriers in any occupation, but especially among cooks and handlers of foodstuffs. In such a carrier survey, two examinations should be done on each individual.

For release of patients, therefore, and detection of carriers, the examination of feces is of especial importance. It is a procedure that properly requires the most careful attention of the bacteriologist. A bit of fresh feces the size of a pea (or better when feasible 1 c. c. of liquid stool, obtained, if diarrhoea is not already present, by administration of a saline cathartic) is mixed with 10 c. c. of plain broth or sterile salt solution, then allowed to stand and sediment for fifteen minutes. One or more loopfuls are taken from the top and placed on the surface of one plate of hardened Endo medium. This droplet is carefully carried over the surface by means of a glass elbow rod or similar spreader, and without further inoculation the same rod is used to seed a second Endo plate. In this way a satisfactory separation of the colonies may be secured. After incubation overnight suspicious colonies are fished to plain agar agar slants, or better, Russell's double sugar and the identification completed by agglutination tests.

Evacuation of Typhoid Carriers.—Whenever it becomes necessary or desirable to evacuate a carrier of typhoid or paratyphoid fever to the United States, the carrier shall be evacuated as a patient on sick report.

The Widal Test, in view of previous vaccination with T.A.B. vaccine, has been generally held of little or no value; however, it should be stated that the determination of agglutinin titer of patient's serum at intervals of one week and the demonstration of progressive and marked increase of agglutinin content of the blood offers, especially in the absence of positive blood culture, excellent evidence as to the etiology of the disease. Thus, in typhoid fever an agglutinin titer (Widal Test) of 1 to 40 during the first week of the disease may advance to 1 to 1280 during convalescence. In paratyphoid "B" fever the titer frequently advances to 1 to 2560; however, in paratyphoid "A" fever it may not reach 1 to 640. Formalinized and standardized bacterial suspensions of B typhosus, B paratyphosus, A and B paratyphosus B may be obtained on request from the Central Medical Department Laboratory, A.P.O. 721.

Post-mortem Bacteriology: At autopsy, on suspected cases, cultures should be made from the mesenteric lymph glands and from the spleen.

PATHOLOGY

1. The significant gross pathology of typhoid fever can be briefly summarized as an acute process found in the lymphoid elements of the intestine (chiefly the ileum) and in the enlargement and softening of the lmyph nodes in the mesentery and mesocolon. These nodes in the immediate neighborhood of the lower end of the ileum, the appendix and caesum usually show the most marked change. The

opened intestinal tract reveals hyperplasia of all the lymphoid elements such as Peyer's patches and the solitary follicles. There may be in most unusual cases only hyperplasia of these elements, but, as a rule, they show injection, exudation and rather extensive ulceration particularly in the lower end of the ileum. The lower third of the ileum is frequently the location of an ulcerated Peyer's patch or solitary follicle that may have perforated or may have become the source of considerable hemorrhage. The mucosa of the appendix and the caecum are, in about one-third of the cases, also the seat of typhoid ulcers.

The spleen is usually enlarged and the pulp is semidiffluent. The parenchymatous organs are somewhat enlarged and have a cooked appearance suggesting cloudy swelling of a moderate or extreme degree. Broncho-pneumonia is frequently present as a terminal lesion. This represents the usual list of anatomical findings disclosed to gross examination; therefore, on opening the abdomen, the first important gross features that attract attention are the size of the lymph nodes in the mesentery and the upper part of the mesocolon and the size and consistence of the spleen.

In children these structures may be misleading and in adults afflicted with tuberculosis a confusing gross picture can be offered, but in the Army of the American E. F. composed of young adults any such picture found at autopsy should be thoroughly investigated. Such investigation calls for the removal of the intestine and an examination of the intestinal mucosa for lesions related to the lymphoid elements. Any change noted should be followed with supporting evidence gained by bacteriological examination.

It should be kept in mind that the American Army has been vaccinated against typhoid and as a result the gross pathological picture may not be as clear as in unprotected individuals. Indeed, several protocols received indicate that there are fewer gross lesions in the intestine and that they are prone to appear in the ileum at points very near the ileo-cecal valve and even in the appendix and caecum. Other records indicate that death probably occurred during a relapse, since there was evidence of a few almost healed ulcers near the location of one or more acute ulcers, one of which had perforated.

Cases of typhoid may escape attention at autopsy if early and complete regional examinations are not conducted and recorded in a methodical manner, and it is imperative that the pathologist support any suspicion of typhoid fever gained on gross examination by a well conducted post-mortem bacteriological examination. Cultures taken from the gall-bladder and from the lumen of the bowel may offer the only positive findings of a "carrier" of the disease. Cultures offering the pathologist the best support may be taken from the spleen and lymph-nodes in the drainage path of actual intestinal lesions.

Cases possessing the pathology and bacteriology of typhoid should be entered under the *cause of death* at the close of protocol as *typhoid fever* and then, if desired, follow in parenthetical manner with any important sequel present, such as "perforation." Several protocols have been received in which the complete pathological and bacteriological pictures of typhoid fever were recorded, but the *cause of death* was entered as "Peritonitis," "Perforation of the Intestine," "Broncho-pneumonia," "ACUTE entero-colitis."

Attention is directed to Section XVII of the pamphlet "Sick and Wounded Reports" (effective September 15, 1918). All diagnoses should conform to these instructions if a proper record of disease is to be made.

PREVENTION AND CONTROL OF TYPHOID AND PARATYPHOID FEVERS

Typhoid fever is increasing in the American E. F.—so are the paratyphoid fevers.

Vaccination is a partial protection only and must be re-enforced by sanitary measures.

Faulty conditions of sanitation that may not be dangerous now will become serious menaces when the warm weather sets in. There is still time to correct many of these conditions. If this is not done many soldiers will not get back to the United States after completion of their arduous service, and it will be in part your fault and our responsibility.

The means of conveyance are water and food. Water may be contaminated by drainage from latrines and indiscrim-

inately deposited defecations. Food may be contaminated by hands of carriers; by flies that come to it from latrines and uncovered feces; therefore,

Remember: That all water in France is regarded as contaminated unless it is under constant supervision of water supply personnel. See that G. O. 131, G.H.Q., 1918, is carried out. Don't give orders only--personally assure yourself that chlorination is properly carried out. The responsibility ultimately falls upon those charged with sanitary control and not upon the enlisted man who mixes the hypochlorite of lime with the water. Study the means of prevention of drinking at unauthorized sources. The best way to do this is to see that an adequate supply of supervised water is conveniently available wherever men work or live. Other means are the marking of water points; the removal of faucets; the placing of guards, and last but most important, *the education of the men.*

Remember: That the most dangerous carriers are the ones that work in the kitchens. Enforce the washing of hands by kitchen personnel before the preparation and serving of food. Do not leave this to orders alone. Have a reliable officer or N. C. O. supervise this and see that the means of washing are on hand. Also remember that many cooks who have been found to be carriers have often given histories of recent intestinal disturbance; therefore, inspect your kitchen personnel at least twice a week and remove all those who are suffering or have recently suffered from diarrhoeas. Repeated attacks of diarrhoea are particularly suspicious.

Remember: That flies breed in manure, feces and offal of many kinds. Policing of camp and the proper disposal of all such filth will keep down the number of flies. A campaign of such policing, if now undertaken, should go far to yield results by spring. Flies alone can not spread these diseases if latrines are covered and access to feces prevented. Look at the lids on your latrines. Correct the conditions which lead to uncovered feces in camps. Keep the food covered so that any flies that get through this cordon can not get at it.

Remember: That an outbreak of diarrhoea may mean typhoid fever. At any rate, the occurrence of epidemic diarrhoea shows that there is a hole in your sanitary plan.

Remember: That even though your camp is a model one the neighboring civilian population may be a source of danger. Try to keep informed of typhoid-like disease in the civilian population where you are stationed.

Remember: That from the sanitary point of view the first case is the most important one. If you evacuate a suspicious case and don't hear what it has turned out to be, make inquiry through the available channels.

CONTROL

1. Upon the occurrence of a single case of typhoid or paratyphoid fever in a command, reinvestigate all the above conditions and correct any deficiencies discovered in the barrier of protection above described.

Examine all vaccination records and administer a single dose of triple lipo-vaccine to all in whom there is the slightest doubt concerning completion of required vaccination.

Request bacteriological carrier examination of your kitchen personnel from the nearest available laboratory. This had best be done through the responsible sanitary authorities.

Before this has been done reinspect your kitchen personnel and remove all who give a history of recent diarrhoea or other intestinal disturbance.

Prohibit the use of all uncooked vegetables and unboiled milk.

Investigate the conditions of the neighboring civilian population as to prevalence of typhoid or typhoid-like fevers.

2. When two or more cases occur in the same command within the same two weeks, revaccinate the entire command in addition to the above precautions. If the outbreak takes on epidemic proportions, add to these precautions the handwashing of all men after defecation.

Further measures of control must be determined after epidemiologic study of the individual situation.

Whenever typhoid or paratyphoid fever occurs in any command, the medical officer will address the officers and the men, at either roll call or retreat, instructing them in the mode of spread of intestinal

diseases, in the seriousness of the situation and in the simple methods of personal hygiene, the importance of cleanliness and the purposes of the sanitary regulations instituted for control of these diseases.

3. The special attention of all officers of the Medical Department is invited to Sections 184 and 185, Article III, Manual of the Medical Department. Compliance is enjoined.

4. All previous instructions from this office in conflict with regulations prescribed herein are rescinded.

PALEOPATHOLOGY

By Roy L. Moodie, Ph.D.,
Department of Anatomy, University of Illinois,
Chicago, Ill.

Paleopathology recently has been characterized as the science which is destined to shed new light on old diseases. The subject is still in a formative state and there is much to be done before a complete realization of its value is attained.

Its beginnings, our knowledge of which is largely of a speculative nature, are to be found in the associations of the earliest animals whose remains occur in Proterozoic rocks, their ancestors being buried in the great Archeozoic complex. Its culmination is in the nature of disease and injury in ancient and prehistoric man; the Paleolithic, the Neolithic, and other fossil men of Europe and Africa; in the ancient races of America: the Aztecs, the Nahua, the Chibcha, the Maya, the Inca and the other numerous pre-Columbian races, of whose structure our knowledge is as yet incomplete; in the ancient Egyptians, of whose structure our knowledge is more complete; and in other scattered evidences of primitive peoples, whose remains come to us in archeological and anthropological investigations. Its field thus covers all of the evidences of disease and injury prior to the opening of recorded medical history which begins with the writings of Hippocrates, Aristotle, Aetius, Alcmeon, Democritus, Empedocles, and other early writers on biological and medical subjects.

A closely analogous field, possibly a part of paleopathology, is the study of the evidences of disease in ancient monuments, stelæ, sculptures and engravings of many kinds which often picture faithfully deformed, atrophied and injured parts from which we may read something of the pathology of the day they represent. Thus Hamburger has figured a stela showing a figure of a man who, judging from the *talipes equinus* indicated on the stela, suffered in youth from infantile paralysis.

The study of paleopathology originated with the interpretation of pathological evidences among the Pleistocene Cave mammals of Europe, whose skeletons were studied by Esper, von Walther, Schmerling, Soemmering, Cuvier, Mayer and Virchow. It was extended by Ruffer, Elliot Smith, Wood Jones and others to the study of the pathology of ancient Egypt and the subject was named *paleopathology* by Ruffer. More recently the evidences of pathology among the more ancient animals, particularly the vertebrates of the Mesozoic, have been studied.

Disease and injury among the early inhabitants of the earth, during the Paleozoic, are not so well known, but this is a field which can be cultivated and in which important results may be obtained. Recently paleontologists, working with invertebrate fossils, have called my attention to callosities on the shells of brachiopods and other shelled animals, indicating some form of traumatism, injuries to ancient crinoids, and scar-like lesions on the hinge line of ancient molluscs which are possibly of a parasitic nature. If some one acquainted with the fossil invertebrates should attack this problem I am sure a great deal could be learned, but so far as the present literature is concerned definite lesions seldom have been described.

The earliest form which pathological processes took, aside from those of a traumatic nature, were parasitic. Parasitism, preceded by mild forms of communism and commensalism, is known to be very ancient and to this influence doubtless the first forms of disease were due. Parasitic evidences have been described as old as the Devonian, and traumatic evidences are known as old as the Ordovician. Doubtless close search would reveal other interesting evidences among the older forms of life, even as far back as the evidences of life itself, unless, as suggested elsewhere, infectious diseases were warded

off by the great natural immunity which only broke down after ages of evolution, accompanied by racial degenerescence.

The part played by bacteria—and it is now well known that bacteria are very ancient—is still largely speculative. The pre-Cambrian bacteria so far known are supposed to have had an activity allied to that described by Drew for *Bacterium calcis* and other marine calcium-precipitating bacteria. Doubt has even been expressed as to whether the small bodies seen in the algal shales are really bacteria.

The results of infection by bacteria are not definitely known prior to the Mesozoic. Bacteria and fungi, possibly however, chiefly those of decay, are widely distributed and well known from the Carboniferous rocks. Here lies a wide field of research, although a difficult one, dealing with the origin of that type of disease which is so troublesome to humanity today. It seems probable from present evidences that a wide distribution of the bacterial types of disease and the resulting pathology is a relatively recent phenomenon, with an antiquity of a few million, possibly only one million, years, which, when compared with the scores of millions, possibly hundreds of millions, of years which animal and plant life have existed, is a very brief time. Future studies and more data may, however, modify this conception considerably. But as we ascend the geological scale of life evidences of bacterial infections are more and more commonly found.

Disease may be defined in its primitive condition as an antagonism between two units of life, whether neighboring cells in the same metazoon, or between an animal cell and a plant cell. The presence of certain one-celled fungi in protozoans, if it results in injury to either, is a form of disease in its simplest aspects. We may have to look to conditions in the unknown Archeozoic for future knowledge of these conditions. Pathology, of course, is the disturbing results of this antagonistic association. The search for the earliest evidences of disease may be a fruitless one, and we may have to be content with speculations for some time to come, but in view of the recent great advances made in paleontological investigations the future seems bright.

The nature, classification, and cause of tumors among man and animals is an important phase of pathological research. It is interesting to find among the earliest evidences of pathology definite tumors due to parasitic influences among the Paleozoic forms, but later, in the Mesozoic, true tumors, osteomata and a form of tumor with the characteristics of the modern hemangiomata, are known, the causes of which are not clear. These tumors partake of the characteristics of modern tumors so far as organization is concerned and differ only in slight details from similar pathology of more recent times. Tumors were apparently not very numerous, so far as we can read the record from the fossil bones, being known so far chiefly in the Mesozoic Dinosaurs and Mosasaurs.

Whether the study of these ancient evidences of disease and injury will aid in a better interpretation of modern pathology is not yet determined. It will certainly give a wider viewpoint to the interpretation of disease and a study of ancient evidences extends our knowledge into the remotest periods of time.

The following list of books and papers is appended for the benefit of those who are not acquainted with the literature of this subject, and who may wish to read further in the subject:

LITERATURE LIST

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Arnold C. Klebs: Paleopathology. Johns Hopkins Hosp. Bull., Baltimore, 1917, xxviii, 261-266; Boston M. & S. J., clxxvi, 364-365, 1917.

L. Lucas-Championniére: Trepanation neolithique, trepanation pre-Colombienne, Trepanation des Kabyles, trepanation traditionnelle. Paris, 1912.

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tions Found Among Fossil Animals. Ann. Med. Hist., New York, i, No. 4, 1917. (Issued February, 1919.)

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Rudolf Virchow: Knochen vom Hohlenbaren mit krankhaften Veranderungen. Ztschr. f. Ethnol., Berl., xxvii, 706, 1895.

DIAGNOSIS AND MANAGEMENT OF A SEVERE CASE OF INTESTINAL TOXEMIA

By Marvin H. Smith, M.D.,
Jacksonville, Fla.

Without attempting to enter into a discussion of the tremendous subject of autointoxication, I desire merely to preface my remarks with the statement that the former term suggests to me a great variety of physical states brought about by the absorption of poisonous or toxic substances from the digestive tract, usually attended by constipation, whereas the type of intestinal toxemia to be considered in this paper is more often attended by looseness of the bowels than otherwise.

I concur most heartily with the thought advanced by Alvarez, of San Francisco (*Journal of the American Medical Association*, January 4, 1919), that cases which suffer from headache, malaise, dizziness, bad taste, foul breath, etc., when the colon is choked up and which symptoms are speedily relieved by an enema or purge, should not properly be classified as toxemia cases since in true toxemia we contend with poisonous agents which have entered the blood stream and can not be eradicated by a single course of magnesium sulphate or denatured by homeopathic doses of calomel. In another particular, however, my experience is at wide variance with that of Dr. Alvarez, as my records show toxemia from the intestines to be a comparatively common ailment, while in his it is rare.

For the past few years the discussions on the pros and cons of autointoxication and intestinal toxemia have waxed warmer and warmer as the agitation has spread. Enthusiasts on both sides have sprung up, one group charging 80 to 90 % of all bodily infirmities to one or the other of these conditions, while the other group are unable to find any evidence convincing enough to prove to their satisfaction that there is such an entity as self-poisoning or toxemia from absorption.

In this connection I can not refrain from expressing my admiring appreciation of the ardor and burning desire for the truth which has characterized the argument advanced by these two factions, and I assume the attitude that an unbiased survey of the current literature will show substantially that reliable data has been accumulated by internists and laboratory workers in the ranks of both extremists. As the research work advances, undoubtedly it will soon be demonstrated that each swing of the pendulum back and forth will bring us closer and closer to our equipoise between the extremes.

The case which I wish to present is, in my judgment, a typical illustration of intestinal toxemia demonstrating profound symptoms with unmistakable nerve irritation. Despite the fact that a few good men have not yet accepted the idea of intestinal toxemia and the possibility of destroying an existing putrefactive flora in the colon, it is my belief that the diagnosis of this case, its management and the results obtained form a strong supportive argument that the method of treatment referred to above appears now not only to be feasible but commends itself to us for future consideration.

Mr. H. S., age 43, married, was of medium height and weight.

Physical examination showed the body to be emaciated, skin reddened, thickened and edematous and in many places large areas acutely inflamed, exuding sero-purulent material, the most terrifying itching that I have ever witnessed being present, which was much worse at night. Heart, lungs and liver were normal.

The urine was amber, its specific gravity 1010, acid reaction, calcium oxalate crystals present; indican and other elements absent.

Blood pressure 160, carbon dioxid tension 35, malaria, typhoid and Wassermann negative.

Stomach Analysis: Two ounces expressed, mucous excessive, free HCl 46, combined 15, total acidity 60, pepsin and rennin present, ptyalin active.

Feces watery, exceedingly foul and putrid, no occult blood nor fresh blood present, reaction strongly alkaline. Incubator tests showed formation of a large amount of carbon dioxid gas.

Sigmoid examination showed mucous membrane to be very much engorged and coated with glistening mucous.

Cultures grown from the feces showed fairly flourishing colonies of bacillus putrificus, butyricus, colon and streptococcus lactacus.

The skin symptoms were so alarming and severe and the itching so intense that I felt it my duty to refer the patient to a reliable dermatologist, which I did. For three weeks he directed the treatment both locally and internally according to his wishes, at the end of which time the patient returned to my laboratory not improved in any respect.

I put the patient on fruits, vegetables and cereals and distilled water ad lib., and began enemata containing the various intestinal antiseptics, and in addition used the so-called antiseptics taken by mouth (for which I have little regard), all to no profit. The character of the stools remained practically unchanged. I then began to irrigate the colon with Epsom salts solution, one dram to a quart and powdered antisepticus N.F. one dram to a quart, alternating the two solutions. After irrigating I also introduced into the colon every other day about four ounces of living culture of bacillus glyco-bacter, bacillus Bulgaricus and bacillus acidophilus, which was carried well through this portion of the bowel by means of the multiplex current applied sometimes by means of an electric pad placed dorsally and another on the abdomen, for weight, a sand bag was usually used over the abdominal pad. At times I used a rectal electrode instead of one of the others.

At the end of the first week the nervous symptoms were somewhat improved and in two weeks there was noticeable clearing up of the skin condition and the itching was much better and at the close of the sixth week the individual seemed well. He was, however, urged to continue treatment for a month longer, but he, like most convalescents, acted on his own judgment and went away.

For five months he remained in excellent health and then he noticed a slight itching of the legs and the stools were again becoming putrid. I wish here to state that the odor, gross appearance and reaction of the stools at the termination of this season of treatment had entirely changed. He again applied at my laboratory. The bacteriology of the stools was found to be practically the same as in the first attack. The culture was administered into the colon as before and the symptoms all disappeared within two weeks, not a dose of medicine being given by mouth. I desire to keep before you the fact that in the first seance the patient was put on the so-called intestinal antiseptics and the enemata before trying out the living culture. Very little was accomplished. At the close of treatment, after waiting several days, a specimen was incubated and none of the putrefactive group was found in any appreciable number except the colon bacillus. It would seem that the other organisms mentioned were chiefly responsible for the trouble.

I offer my most sincere apology for presenting this paper setting forth my experience with only one case of this type of intestinal toxemia. However, allowing something for error, I feel that this report may serve as an hypothesis for further work. I make no claim whatever to priority in the use of the acid-forming organisms in the manner above described, although some changes in technique in treatment and culture work have been introduced in my laboratory.

There are other types of intestinal toxemia manifesting themselves by different symptoms and skin lesions. I hope not to become over enthusiastic, but I venture the conjecture that some form of intestinal toxemia will be found closely interwoven with the etiology of glaucoma and probably will turn the light upon other hitherto unexplained pathology.

456-459 *St. James Bldg.*

A CASE OF MYXEDEMA

By Myron B. Allen, M.D.,
Assistant Professor of Pathology and Bacteriology, Atlanta Medical College (School of Medicine, Emory University),
Atlanta, Ga.

HISTORY

Mrs. J. N. T., Hoschton, Ga., American, housewife, age 52, married, weight 89.5 Kg. (240 lbs.).

When asked her chief complaint she replied: "Doctor, everything in the world is wrong with me. My head aches; my appetite is poor; I cough up blood; I can not sleep well; my heart flutters; I am constipated; I can not walk nor go to bed nor get up out of a chair without two people holding me up; and get fatter and fatter every day."

Family History: Father died at 76 from accident; mother living, age 80, health fair; four brothers living and in good health; two brothers dead, one from typhoid at 35, one from Bright's disease at 56; four sisters living and in good

health except one who suffers from occasional attacks of asthma; one sister died at 45 from "change of life."

Tuberculosis, malignancy, arthritis, diabetes, pellagra, acute rheumatic fever, and nervous and mental diseases denied in F. H.

Past History: Born and reared in northeast Georgia and had always enjoyed splendid health and been unusually active until the present illness began 27 years ago. Measles, scarlet fever, whooping cough and chicken pox she has had with complete recovery. No complications nor known sequelæ. Operations, accidents and all other illnesses denied.

Marital History: Married 29 years. Husband living and in good health; one child, age 27 (married), healthy; one grandchild, healthy, age four. No miscarriages.

Menstrual History: Negative. Menopause 6 years ago.

Present Illness: Dates from the birth of a child 27 years ago, at which time she was confined to bed for one month with "child bed fever." She has never had her former health since. Weight previous to that time was around 56 Kg. (150 lbs.). Since then she has never been strong, gradually gaining weight and losing strength until at the present time she is practically helpless and very weak. Has done no domestic work for a number of years. Has not worn a corset for fifteen years; can not sit down in an ordinary chair (on account of bulkiness); has spells of despondency; passes blood from the rectum; can not eat solid food on account of loose teeth; has indefinite pains throughout her body and complains of all the ailments enumerated in paragraph one above.

Habits: Nicturia (2 to 3); doesn't sleep well; no coffee, tea nor drugs; eats regularly but poor appetite; constipated; worries a great deal. Environment excellent; social standing the highest.

PHYSICAL EXAMINATION

The patient is an unusually large woman with an apathetic look, bloated appearance, slow movements, slurring, slow and indistinct speech, lying propped in bed with a slight dyspnea.

Hair dark, thin, dry and brittle. Skull symmetrical and well developed. Scalp negative.

Face: Physiognomy altered remarkably, viz., skin presents a yellowish tinge, is rough, scaly and dry and the lines of facial expression are completely obliterated, leaving a puffy, bloated, mask-like expression. Lips thick and everted; teeth carious and loose; pyorrhea alveolaris marked; gums bleed on touch; breath foul; mucous membranes pale; and tongue papillæ hypertrophic. Tongue protrudes in mid-line, is furred, shows indentations of the teeth and completely fills the oral cavity. Voice harsh and barely above a whisper. Pharynx negative. Temperature 97.4° F.

Eyes: Pupils regular and react to light and accommodation. Movements of eyeballs normal. Field of vision somewhat contracted. Palpebral apertures about two-thirds closed, causing a sleepy, dreamy appearance to the eyes. Conjunctivæ pale and injected. Eyelashes and eyebrows intact but thin. Slight gross disturbance of vision.

Ears: Negative from gross examination. Hearing somewhat impaired.

Nose: Large, broad and thick, causing the features to look very coarse.

Neck: Thyroid not palpable. No palpable glands, throbbing nor stiffness. Marked swelling of subcutaneous tissues which hang down in great folds anteriorly.

Thorax: Symmetrical, well-developed and very large. Expansion limited bilaterally. Intercostal spaces obliterated by a firm, inelastic swelling which does not pit on pressure. Respirations 24 per minute, rhythmical but slightly labored. Great masses of fat in supra-clavicular regions and over cervical vertebræ. Cardiac dullness appears to be increased in all diameters. Apex beat somewhat diffuse, but P. M. I. located in 6th interspace 1 cm. outside mid-clavicular line. Sounds indistinct, but no murmurs audible. Appears to be a slight accentuation of the aortic second sound. There is a slight arrhythmia. Lungs clear except for a few moist rales at both bases posteriorly.

Abdomen protruding, tympanitic but no masses, tenderness nor rigidity encountered on palpation, which is markedly interfered with on account of an enormous thickening of the abdominal walls. Hepatic dullness increased several cm. in vertical diameter, but not felt below the costal margin. Can not palpate spleen.

Extremities: Skin dry, rough and scaly. Limitation of joint movements. Hands broad and relatively short. Backs of hands and fingers markedly hyperplastic in comparison with the palms. Can not close fists, and grip extremely weak. Radial pulse 65 per minute and arrhythmic. Systolic blood pressure 165 mm. Hg. Epitrochlear glands non-palpable. Lower extremities present a very firm, inelastic swelling which does not pit on pressure except around the ankles, where there is slight edema (pitting). Locomotion impossible without double assistance and slightest exertion causes dyspnea.

Mental State: Mental hebetude marked. Memory for remote events good, but for recent events defective and inaccurate. Despondent, suspicious and irritable.

Reflexes apparently normal; sensations dulled.

LABORATORY

Sputum negative for tubercle bacilli. Blood negative for plasmodia. (This is a malarial district.)

Erythrocytes, 3,100,000.
Leucocytes, 5,800.
Polymorphonuclears, 58%.
Small mononuclears, 27 %.
Large mononuclears, 12 %.
Eosinophiles, 2 %.
Transitionals, 1 %.
Feces negative.

Urine: 800 c. c., acid, clear, amber, indican trace, albumin positive, sugar negative. Many hyaline and granular casts.

DIAGNOSIS

Hypothyroidism (myxedema).

TREATMENT

Daily warm baths were given. The patient was placed on thyroid extract 0.10 G. t. i. d. for a period of one week, at the end of which time the dose was increased to 0.25 G. t. i. d. At the end of the second week she had lost 4 kg. (10 lbs.) in weight. During the third week the dose was increased to 0.30 G. t. i. d. and a high protein diet prescribed. Four-tenths of a gram was given t. i. d. during the fourth week. She developed during this week symptoms of thyroidism (tachycardia, nervousness, sweating, etc.), ushered in by an attack of fainting. The drug was suspended for one week, at the end of which time she was placed on 0.10 G. t. i. d. and this dose was steadily maintained. At the end of the twenty-fifth week the patient weighed 65 kg. (175 lbs.), a loss of 65 lbs., and feels perfectly healthy. Walks like a normal individual (without assistance), does her house work, handiwork, has a good appetite, is cheerful, takes prolonged auto rides without fatigue, sleeps soundly (without nicturia), and complains of no cough, headache, weakness nor dyspnea. Eyesight and hearing improved. Wears a corset, speaks perfectly distinctly, looks bright and says the past seems like a dream and that she feels as though she were 16 years old. Complains of nothing whatever.

Her white and red cell count are practically normal. The hemoglobin is 90 %. Urine still shows a trace of albumin and a few hyaline and granular casts; free from indican. Systolic pressure 160 mm. Hg. Cardiac sounds distinct and regular.. She eats solid food (teeth no longer loose) and the mental condition seems normal.

The malena was found to be due to hemorrhoids.

AUTHORS' ABSTRACTS

Medicine

A Practical Discussion of Diabetes and the Allen Treatment. W. W. Blackman, Atlanta, Ga. The Journal of the Medical Association of Georgia, Vol. 8, No. 8, December, 1918, p. 166.

Statistics from the Massachusetts General Hospital show that the mortality from diabetes was reduced in 1917 over 1913 from 28 % to 6 % by the methods inaugurated by Allen. Allen defines diabetes as deficiency of the internal secretion of the pancreas. The diabetic must be rendered and maintained sugar-free, not only because his symptoms are thus abated but also because the power of his pancreas to promote assimilation of carbohydrates is thus markedly increased.

The treatment has been divided into three stages:

1. The stage of starvation, lasting one to three days or perhaps four, when the patient is becoming sugar-free.

2. The stage of gradually working the diet up to the limit of tolerance.

3. The stationary stage, when the diet is kept at a constant level of maximum tolerance.

The stage of starvation may be inaugurated abruptly, the patient receiving only broth and tea or black coffee at the meal hours and water as desired. When sugar-free a graduated series of ascending daily diets is initiated, constituting the second stage of treatment. Illustrative tables are given to show the use and measurement of 5, 10, 15 and 20 % vegetables and fruits; meats, eggs, butter and beverages. The diet of the fat diabetic should contain, except for brief intervals, the minimum number of calories which the normal individual of the same weight and activity would require. "Reduce the weight of a fat diabetic and keep it reduced." By the Allen method alkalies are unnecessary to combat acidosis.

Tertian Malaria in Two Infants Under Two Months of Age. Charles James Bloom, New Orleans, La. American Journal of Diseases of Children, Vol. 16, No. 6, December, 1918, p. 391.

It is not unusual for practitioners in our section to see malaria in its various expressions among children and adults, but it is unusual to note this particular malady in infants under 6 months of age. Medical literature has not given us many references concerning the signs and symptoms referable to malaria in the very young, and the writer presents two cases in the belief that the manifestations expressed in these cases may be of sufficient interest to justify their publication.

His summary is:

1. Tertian malaria, although uncommon in infants, does occur.

2. The common symptoms noted are: (a) marked cachexia; (b) a corresponding marked diminution in hemoglobin and in the red blood cell count; (c) enlarged spleen; and (d) prolonged temperature (atypical as compared with adults).

3. A soluble preparation of quinin, 0.4 of a grain, in three doses, was given for seven consecutive days and thereafter every other day for one month.

Renal Function as Measured by the Elimination of Fluids, Salt and Nitrogen, and the Specific Gravity of the Urine. Herman O. Mosenthal, Camp Gordon, Atlanta, Ga. The Archives of Internal Medicine, Vol. 22, No. 6, December, 1918, p. 770.

The method of testing renal function by means of measuring the urinary output at two-hourly intervals during the day and in a single specimen at night has been in vogue for some time. Whereas, various researches have demonstrated the types of change which may occur in different diseases, there has been no thoroughgoing investigation made of the possible latitude that may be found in the normal individual. The present paper takes up this phase of the question. It is shown that diet even when varied within the widest possible range does not materially influence the result. If three meals a day are given and the collection of the night specimen of urine is begun no sooner than three hours after supper.

the following criteria may be accepted as indicating the limits of normal variation:

NORMAL STANDARD FOR TEST MEAL FOR RENAL FUNCTION

	Diet		
	High	Low	Normal
Maximum specific gravity	18+	20+	20+
Degrees variation of specific gravity, usually	9+	9+	No value
Specific gravity of night urine	Of no significance		
Volume c. c. of night urine	750 c. c. or less		
N and NaCl per cent. in night urine or highest per cent. in any specimen	Normal if 1 per cent. or higher, not necessarily abnormal if less.		

The present observations on patients bear out the facts previously established for renal disease. Furthermore, it is shown that the identical results are obtained, irrespective of whether the high or low protein diets are administered during the day of the test.

Warning is given that cases suffering with edema have factors involved which put them in a category somewhat apart from other cases. A retention of fluid is indicated by oliguria and a high specific gravity and an excretion of the retained water by polyuria and a low specific gravity. In most instances the specific gravity determination in a single specimen furnishes the clue as to whether or not edema is being eliminated. The change from an oliguric to a polyuric one is usually sudden and not gradual. Within a period of two hours the transformation of renal activity occurs.

Twenty Years' Experience with Electricity and X-Rays as Therapeutic Agents. Henry R. Slack, LaGrange, Ga. Read before Fourth District Medical Association of Georgia, Warm Springs, August 20, 1918.

When the writer began to study electro-therapeutics he thought, as so many medical men do, that, like x-rays, it was a comparatively new thing. Imagine his surprise when looking up the literature on the subject in the library of the New York Academy of Medicine, he found a pamphlet written by Rev. John Wesley in 1759 entitled "Desideratum, or Electricity Made Plain and Useful by a Lover of Mankind and Common Sense." In this he gave the details of a vast number of cases treated by electricity. Among other things he mentions that electricity accelerates the passage of calculi through ureters; that electrifying in a proper manner cures hysteria, fits, flooding, headache, rheumatism, gout, sciatica, swelling joints, palpitation of the heart, and other diseases.

The author states that he has been successful with many cases of acne. X-ray will cure eczema after everything else has failed. Static electricity is the most valuable agent we have for arterio-sclerosis, and also has beneficial affect in hemiplegia, sciatica and lumbago. The crown breeze is a most efficient remedy for insomnia. High frequency will cure torticollis quicker than any other remedy. Tuberculous affections are benefited more by x-rays and electricity than by any medicines. Slack has seen marked improvement even in well advanced pulmonary tuberculosis follow x-ray treatment.

X-ray will often cure epitheliomas without surgical interference, but it is better to use it in connection with surgery, and it should always be employed after an operation for cancer. It is as near a specific for eczema as anything in medicine.

The Allen-Joslin Treatment of Diabetes Mellitus. Albert Woldert, Tyler, Tex. New York Medical Journal, Vol. 108, No. 18, November, 1918, p. 764.

The modern treatment of diabetes mellitus is based upon certain facts established especially through the researches of von Noorden, Naunyn, and later by Allen, Joslin, Hill, Eckman and others. In this country the work of Allen deserves special praise. Briefly, the Allen-Joslin treatment in mild and moderately severe cases consists in having the patient fast for two to four or five days until sugar free. During this period the patient should only take beef broth and a moderate amount of coffee and water. Usually this treatment entirely rids the urine of sugar within two or three days' time. This starvation treatment should be done for the mild cases and moderately severe cases. In severe cases, complicated cases or long-standing cases the starvation treatment should not be given, but in such instances fats should be gradually omitted, then a gradual reduction in the protein food, and afterwards a gradual reduction in the carbohydrates, with eventual fasting if necessary.

The starvation treatment would be dangerous to severe cases if begun at once. Hence a gradual reduction of the foods should be given in such instances before beginning the fast. In all cases after the urine has become sugar free, the next question to solve is to keep the glucose from reappearing in the urine. To do this the tolerance of the patient for carbohydrates must be found out; secondly for protein; and lastly for fats. As soon as the sugar has disappeared from the urine the patient is put upon a 5% vegetable diet, composed of lettuce, cucumbers, spinach, asparagus, rhubarb, sauer kraut, beet greens, celery, cooked onions, tomatoes, okra, cauliflower, eggplant, cabbage, radishes, leeks, and string beans, usually eating two tablespoonfuls at each meal. Then later the patient is given 10% vegetables such as pumpkin, turnips, squash, beets, carrots and fresh onions.

These foods are weighed, or measured, and given in such quantity that sugar begins to reappear in the urine, and this marks the point of tolerance for carbohydrates.

In a similar manner the tolerance for protein is afterwards determined by giving one egg for breakfast and supper and a weighed piece of chicken for dinner, together with two heaping tablespoonfuls of two or three of the 5% vege-

tables until sugar begins to appear in the urine, and this marks the point of tolerance for protein.

To determine the tolerance of fat, after determining the tolerance for carbohydrate and protein, next proceed to give about five to twenty-five grams (one-fourth to one tablespoonful) of fat daily in the form of butter to the diet employed in determining the tolerance for carbohydrate and protein. So long as the acidosis (diacetic acid, B-oxybutyric acid, and acetone) and glycosuria occur, the fat must be kept low.

The return of sugar demands fasting for 24 hours, or until the patient becomes sugar free.

As to bread substitutes, use casoid flour. Lister's diabetic flour and Hepco flour, Barker's gluten biscuit, etc.

Drugs are not important, 'though if constipation is troublesome, Joslin advises aloin or fluid extract of cascara.

Development of Specific Serum Therapy in Pneumonia. Lieutenant W. H. Redden, M.C., U. S. Navy. U. S. Naval Medical Bulletin, Vol. 13, No. 1, January, 1919, p. 35.

It is well known today that the etiological factor in 98 % of all lobar pneumonia is the pneumococcus. It has furthermore been demonstrated by Neufeld, Cole, Avery, Dochez, Lister and others that the pneumococcus in this country can be grouped serologically into four main divisions, namely: Types I, II, III, and IV. This grouping has given rise to the development of a potent specific anti-pneumococcus horse serum against Type I pneumonia, which reduces the mortality from about 30 to 8 %, and a less potent serum against Type II, in which the mortality is reduced one-half. Since these two types represent over half the lobar pneumonias in this country, and since the pneumonia mortalities are represented chiefly by these groups, this development of serum therapy by Cole and his coworkers at the Rockefeller Institute for Medical Research represents the most important advance in the treatment of lobar pneumonia.

Grouping is done from pneumococci obtained in the sputum of the patient, injected into a mouse or cultured in special media; then tested for agglutinins or precipitins in the specific anti-pneumococcus sera. The process requires from 8 to 24 hours.

Already a number of state boards of health such as Massachusetts, New York and Pennsylvania prepare anti-pneumococcus serum Types I and II for use by physicians who will make a proper sputum grouping.

Grouping not only makes specific serum therapy available, but aids in prognosis, the order of increased mortality being IV, I, II, III.

After proper diagnosis, the patient should be tested for sensitiveness to horse serum; then the proper serum should be given over a half hour period in 100 c. c. doses at 8-hour intervals, 'till the temperature, pulse and respirations reach normal. The most ideal time for serum therapy is within the first 24 to 48 hours of the disease. Hence the desirability of an early diagnosis.

The Treatment of Bronchial Asthma with Vaccines. I. C. Walker, Boston, Mass. Archives of Internal Medicine, Vol. 23, No. 2, February, 1919, p. 220.

Frequently patients with bronchial asthma are sensitive to bacterial proteins; the most common type of protein is that of staphylococcus aureus and albus and streptococcus hemolysans and viridans. Such cases are usually greatly benefited or relieved by treatment with vaccines of those bacteria to which they are sensitive.

Patients with bronchial asthma that are not sensitive to any type of protein, food, bacteria, plant or animal are frequently greatly benefited or relieved by autogenous vaccines which are made from the patient's thick sputum. The sputum is shaken in bouillon and plated on blood agar to identify the type of bacteria. Very good results are obtained by giving a vaccine made by growing the thick sputum in dextrose bouillon.

The younger the patient the better the prognosis from vaccine therapy. Permanency of relief from vaccine treatment depends upon the patient's resistance.

Lessons from a Study of One Thousand Diphtheria Deaths. Bernard W. Carey, Boston, Mass. The Boston Medical and Surgical Journal, Vol. 130, No. 3, January, 1919, p. 67.

Deeply concerned by the apparent apathy of physicians and organized health agencies towards the failure of the morbidity rate to decline while the mortality rate has been so markedly reduced by the use of antitoxin, the State Department of Health of Massachusetts started an investigation to ascertain, if possible, what factors might be responsible for this condition and to remedy it if possible.

This investigation showed that nearly 65 % of the deaths occurred in children 5 years of age or under, and that one-fourth were sick one week or more without medical attention.

This can only mean that those responsible for the welfare of these children were not aware of the possibility of sore throats being diphtheria and thus neglected to care for them until it was too late for antitoxin to be efficacious.

It was also shown that doctors by awaiting the results of their cultures before administering antitoxin lost valuable time. The dictum is offered that any throat that needs a culture for diagnosis should have antitoxin given at the time of taking the culture.

It would appear that the medical profession is not utilizing so freely as they should the facilities for the diagnosing, immunization and treatment of this condition which the state furnishes to them without charge.

That education of the laity to the necessity of calling a doctor early in sore throats and reminding the doctor to use available means for the reduction of both morbidity and mortality appears to be the only means left to secure the desired results.

TROPICAL DISEASES AND PUBLIC HEALTH

STUDIES ON MALARIA CONTROL. III. OBSERVATIONS ON THE PREVALENCE OF MALARIA, AND ITS CONTROL BY TREATING MALARIA CARRIERS, IN A LOCALITY OF GREAT PREVALENCE IN THE MISSISSIPPI DELTA*

By C. C. Bass, M.D.,
New Orleans, La.

PREVALENCE

The prevalence of malaria throughout the world varies in different parts, from none where the disease does not occur at all up to the maximum possible. Not only is there considerable variation in its prevalence in different parts of the world where it exists, but there is also considerable difference in various groups of people situated within comparatively short distances—within a few miles of each other. Therefore, the extent to which the disease prevails in a small area like a county or a smaller area, is not necessarily an indication of its prevalence in the entire state or in the country. The observations to be referred to here, made in Bolivar and Sunflower Counties, in Mississippi, in the Mississippi delta, do not necessarily indicate the prevalence of the disease throughout the State. These are, however, representative counties of the Mississippi delta, and it is quite likely that the prevalence observed there is more or less the same as that which would be found in most of the delta counties of Mississippi and probably in the adjoining states.

I do not know what the maximum possible prevalence of malaria is, but I am sure it may approach, if it does not reach, 100 % whenever the conditions are the most favorable. There seems to be great individual variation in susceptibility to infection, but it is possible and probable that nobody is absolutely immune under all circumstances and conditions. Experimentally, it has been found that an infected mosquito biting for a very short period of time is capable of producing infection. Mitzmain (U. S. Public Health Reports, Vol. 31, No. 35, September 1, 1916) infected fourteen out of seventeen persons experimentally by allowing from one to four infected Anopheles to bite the volunteers from twenty seconds to one minute. The three persons who were not infected were bitten by only one mosquito and that one after it had previously infected three other persons. These were all presumably susceptible individuals who probably had not acquired whatever immunity results from previous attacks. This experiment indicates that perhaps 100 % of persons may be infected with malaria whenever there is sufficient opportunity for this to occur. However, in a community where the disease has prevailed for a long time, it is quite possible that a considerable per cent. of the people will have acquired sufficient immunity or resistance to the disease to prevent their becoming infected except when bitten by large numbers of infected mosquitoes or possibly only at certain times when their vitality and resistance is lowered for some special reason. In one instance, I examined blood specimens collected from a group of people living on a certain street and very near a bayou which was a very prolific source of mosquitoes in the town of La Ceiba, in Spanish Honduras. Ninety-five per cent. of all examined were found to have malaria parasites at the time. This would lead to the feeling that perhaps under the most favorable circumstances for the prevalence of malaria, it might be possible that even 100 % would be reached.

During 1916 and 1917, a careful history of recent attacks of malaria was taken of 31,459 persons in Bolivar County, living in an area of approximately 325 square miles. Of this number, 40.30 % gave a history of having had one or more attacks of malaria during the previous twelve months. Examination of the blood of

*Note.—This is one of a series of papers to be published, based largely or entirely upon malaria control work conducted jointly by the International Health Board and the Mississippi State Board of Health.

From the Department of Experimental Medicine, Tulane Medical College, New Orleans, La.

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those who gave negative histories showed that 15.93 % of them also had malaria. If we add those who gave negative histories but who were found upon blood examination to have malaria parasites in their blood to those who gave definite histories of attacks during the previous twelve months, we have an indicated prevalence of malaria during the year of at least 49.81 %. This includes the entire population. The actual prevalence would probably be somewhat larger than this figure, because it has been found that a single blood examination is not sufficient to find all infected persons, and this estimate is based upon only one examination of those who gave negative histories.

The highest infection found in any one large group of people in the Bolivar County investigations during 1916 and 1917 was in our Community 14, having an area of 9 square miles. A blood examination was made of 381 persons living in this community, and of these 81.10% were found infected.

In Sunflower County, during 1918, a census was taken of 8053 persons living in an area of 100 square miles. Of these, 36.26 % gave a history of one or more attacks of malaria during the previous year. Blood examination of 7639 persons, including all who gave negative histories and many who gave positive histories, showed 22.24 % to be infected. If we add the total number of those who gave negative histories but who were found upon blood examination to have malaria, to the total number who gave definite histories of attacks during the previous twelve months, we have a prevalence indicated of approximately 50 %.

Survey of 325 square miles in Bolivar County and 100 square miles in Sunflower County, including blood examination of those who gave negative histories, indicates, therefore, a prevalence of malaria in these two counties of approximately 50 % of the total population. That is to say, that during the twelve months approximately 50 % of all the population have malaria.

During the five-year period 1914 to 1918, inclusive, the cases of malaria reported to the State Board of Health by the physicians of Sunflower County averaged 8236 per year. The survey of the 100 square miles referred to in Sunflower County in 1918 indicates that the population of the entire County is approximately 63,000. This would give a case rate of 13.7 %, which is very much less than the approximately 50 % prevalence indicated by the evidence previously referred to. This is explained by the fact that the approximately 50 % prevalence presumes to include all persons who had malaria, whereas the physicians' reports only include those who were treated by physicians. It is a fact that a large portion of those who have attacks treat themselves and do not call physicians. Incidentally, it is interesting to note that these figures indicate that the physicians of the County do not treat more than about one-fourth of the malaria that occurs.

CONTROL

All who are informed on the subject recognize that the transmission of malaria could be entirely prevented by entirely preventing mosquito breeding. Malaria could be controlled in any locality, therefore, by anti-mosquito measures. It is not my purpose to discuss here the feasibility and practicability of mosquito control in this particular kind of country, though it may be said successful mosquito control would necessarily be very expensive.

The transmission of malaria could also be prevented if those who are infected in a locality were all disinfected so that they could no longer be a source of transmission. Theoretically at least, it would be entirely possible to disinfect all malaria carriers in the community by the use of the specific remedy for malaria—quinin. It is supposed that quinin when taken properly for a sufficient length of time will disinfect any person. I believe that to be the case. During 1916 and 1917 the infected persons found by blood examination and history in Bolivar County were furnished quinin treatment in different size doses and for different periods of time while under many other variable experimental conditions, with the object of determining the best methods of treatment and especially the best method of procedure by which the largest per cent. of the population could be reached and disinfected. These experiments were conducted over a period of two years, and at the end of that time it was thought that we were able to lay out a definite plan of

malaria control by treating infected persons which promised absolute and definite results. Resurveys were made in several of the communities in Bolivar County that were treated in different ways and the reduction indicated for the entire population resurveyed was 35.52 %. This includes the different experimental methods of treatment, some of which could not, in the light of our present information, have been expected greatly to reduce the disease. The best result obtained was a reduction of 83.82 % in a community resurveyed exactly twelve months from the date of the first survey.

The work done in Bolivar County during 1916 and 1917 was of experimental nature to such an extent that it could not serve as a satisfactory demonstration of malaria control, nor could it be considered as a basis on which to estimate the cost of control by disinfecting the infected persons. Therefore, a demonstration of malaria control according to the best methods learned in the Bolivar County experience, was undertaken in Sunflower County, in 1918, with these objects especially in view. The method followed was essentially to make a malaria survey of sections of the country taken up as facilities permitted, to determine who were malaria carriers and then to properly treat all of them. Both the histories of previous attacks and blood examination of those who gave negative histories were relied upon. All found to be malaria carriers, or probable carriers because of positive histories, were placed upon the standard eight weeks' treatment of quinin that was adopted as a result of the two years' observations in Bolivar County. The experimental work in Bolivar County had indicated that this standard treatment followed would result in more than 90 % of cures. It does not disinfect 100 %. The population reached by this method during 1918 was more than 8000.

A list of all the patients treated for malaria by the physicians living in this area of 100 square miles was kept and checked at the end of the year against our records. This check indicates a reduction of 88.82 % in the prevalence of malaria after the survey was made and infected persons put upon treatment. In many instances on large plantations where malaria had been an important factor in the health of the employees almost no malaria occurred.

The best measure of the results perhaps will be to make a resurvey exactly one year from the date of the first survey and compare the occurrence of malaria during the year with the previous year. This has been done in the first community, the only one in which it has been a year since the first survey and treatment. Four hundred forty persons living in this area who were surveyed and furnished treatment whenever indicated last year, were resurveyed this year. Of these, 208, or 47.27 %, gave histories of having had one or more attacks of malaria previous to the survey and treatment. Of these same people only 21, or 4.77 %, have had attacks of malaria during the year following the institution of treatment of all the carriers in the community. This indicates a reduction in prevalence, or we may call it a degree of control, of 89.9 %.

SUMMARY

1. Bolivar and Sunflower Counties are supposed to be representative delta counties, so far as the prevalence and control of malaria is concerned.

2. During 1916 and 1917, the survey and blood examination of the entire population of about 325 square miles in Bolivar County indicated a prevalence for the entire area of 49.81 %, the highest in a sub-division of the area being 81.10 %. During 1918, a survey and blood examination of the entire population of 100 square miles in Sunflower County showed a prevalence during the year of a little less than 50 %.

3. Experimental control of malaria by treating malaria carriers in Bolivar County, including all methods experimented with and all groups of people, was followed by a reduction of 35.52 %, the best for any sub-division being 83.82 % reduction. In Sunflower County during 1918 in an area of 100 square miles having a population of over 8000, the reports of the physicians of the area indicated a reduction of 88.82 %. In a sub-division of the area, 440 persons were resurveyed just one year from the date on which they were surveyed and put on treatment. This resurvey indicates a reduction of 89.9 % over the frequency of malaria attacks during

the year previous to their first survey and treatment.

CONCLUSIONS

The conclusion seems justified, from the experience we have had, that it is practical to obtain a high degree of malaria control in localities of great prevalence in the Mississippi delta by proper treatment of malaria carriers.

AUTHORS' ABSTRACTS

Tropical Diseases and Public Health

Safe Milk for the Small Town. K. E. Miller, Assistant Surgeon, U. S. Public Health Service. Public Health Reports, Vol. 33, No. 50, December 13, 1918, p. 2213.

Owing to the insurmountable difficulties in obtaining a safe milk supply in a small town through sanitary control of dairies, as practiced in the larger cities, there remains only one means of procuring a satisfactory supply, namely, through pasteurization. It is believed that only through municipal control can a scheme of this kind be realized. The town of Tarboro, N. C., has developed such a plan, which is now in successful operation. The plant, belonging wholly to the town, was installed at a cost of about $1,500. Milk is received in bulk at the plant from the dairymen at 12 cents per quart and is clarified, bottled, pasteurized and delivered by the town to the consumers at 17 cents.

The total supply at the beginning was only about 175 quarts, but the arrangement is so satisfactory to the dairymen that the supply is constantly growing. It is now about 250 quarts. The plant is not only paying operating expenses, but is paying a handsome dividend on the money invested. In addition the public is getting safe milk from 3 to 5 cents per quart cheaper than is paid in any of the neighboring towns for raw milk.

The satisfactory operation of this plant is a revelation of the wonderful privileges that may be enjoyed by all other towns whose milk supply is comparable in quantity to that of Tarboro. There are in the neighborhood of two thousand such towns in the United States.

Anopheles Crucians. C. W. Metz, U. S. Public Health Service, Washington, D. C. Public Health Reports, Reprint No. 495, December 6, 1918, pp. 2156-2169.

In breeding habits Anopheles crucians exhibits certain marked differences from the other two species common to the United States. It breeds in brackish waters along the coast and in waters otherwise contaminated that repel the other Anopheles. One striking case of the latter sort is described. A large swamp near Montgomery, Ala., receives waste from a chemical plant. The water is acid and has a high content of sulphates, sodium, potassium, iron and aluminum. Fish and many of the other forms of aquatic life of the swamp have been destroyed. Anopheles punctipennis and A. quadrimaculatus, although breeding near by, were not found in the swamp, but A. crucians was produced in abundance. It is noted that a condition resembling this might be produced by the use of certain acid larvicides if they became greatly diluted.

A study of the range of flight from the swamp over the surrounding regions indicated that a few specimens of crucians flew as much as 9000 feet, but the numbers were too small to be of sanitary importance beyond 5000 feet, except along the line of the inflowing chemical ditch which the mosquitoes appeared to follow for greater distances—53 specimens being taken from 9 buildings at 6500 feet or over near this ditch. No breeding took place in the ditch.

Evidence relative to the habits of adults of crucians confirm previous reports that they seldom enter dwellings, although they collect under dwellings and in outbuildings.

Some Aspects of Malaria Control Through Mosquito Eradication. C. W. Metz, U. S. Public Health Service, Washington, D. C. Public Health Reports, Vol. 34, No. 5, January, 1919, p. 167.

This paper—written originally for the use of a group of students of sanitation — is not intended to be a complete discourse on mosquito eradication, but to emphasize certain general features of mosquito control, to describe certain methods used by the Public Health Service around cantonments and to point out the need of certain additional information regarding malaria mosquitoes and methods for their extermination.

Anopheles quadrimaculatus is the principal vector of malaria in the United States, A. punctipennis and A. crucians being probably much less important. Since quadrimaculatus breeds mainly in quiet waters, these should be controlled first.

Anopheles breeding may be prevented if—

1. The water is drained off, or

2. The surface is kept cleared of vegetation, debris, etc., the banks cleaned and cut down vertically, giving a smooth margin, and

a. An abundance of suitable fish introduced; or

b. A complete film of oil applied; or

c. A swift flow of water set up to carry off or destroy larvæ; or

3. The water is treated with an effective larvicide. It is important to choose the proper method to suit local conditions.

Methods of drainage adapted to various conditions are mentioned, especial attention being given to treatment of seepage outcrops. Standard methods of oiling, also the "capillarity" method, the "sawdust" method, and the "creosote" method are described. Likewise larvicides and certain accessory control measures are discussed.

SURGERY

WAR, RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL.

CERTAIN FUNDAMENTAL PRINCIPLES OF MILITARY SURGERY AND THEIR APPLICATION TO CIVIL SURGERY*

By William E. Lower, M.D., F.A.C.S.,
Cleveland, Ohio.

Over 34,000 doctors from civil life answered the Nation's call and either in Europe or in this country have been adapting the lessons learned from experience in civilian medical schools, in civilian hospitals, in civilian practice, to the problems of war. These problems may be divided into two major classes—the first comprising those which pertain to the conservation of the recruit; to sanitation, personal hygiene, correction of defects, etc.; and the second class comprising everything that pertains to the restoration of the sick or wounded soldiers.

Hostilities have ceased and these thousands of doctors will be returning to their civilian practices. What has been learned from their military experiences which may be adapted to their civilian practice? Unlike the men of other professions who have left their vocations to devote themselves to the temporary avocations of war, the majority of doctors in active service have been employed in the practice of their profession on a vaster scale than could have been their lot under peace conditions. What increased resources will they have to offer as a result of this unequaled post-graduate course in the College of War?

Such questions as these must be self-imposed by each of us whose high privilege it has been to experience an active military service. In our effort to find the answers my colleagues and I have attempted certain analyses of the surgical experiences gained during more than a year's service in a Base Hospital and in a casualty clearing station behind the British lines. Some of these analyses I propose to share with you in the following.

The first problem that confronts the civilian practitioner in his entrance into military service is his self-adaptation to military discipline and to the military organization. Of this I shall speak in some detail later on. The second problem is the acceptance of what must of necessity become the ruling purpose of the military physician or surgeon, which is to prevent sickness and to return to the fighting line the largest possible proportion of the sick and wounded in the shortest possible period of time. It follows that in the military hospital the first consideration, the prime effort would be directed not alone to the moribund, not to the men whose injuries will inevitably make them helpless cripples for the remainder of their lives, but to the men with slight injuries who may be saved to fight again.

Neglect of these slight injuries has often resulted in severe infections requiring a long time for convalescence, and oftentimes has caused permanent impairment, whereas if these slight injuries had had proper treatment soon after they were received, the wounded man would have been returned to the fighting line within two or three weeks.

Thus in the early days of the war the man-power was greatly reduced because sufficient and prompt cosideration was not given to the slightly wounded. This need was so apparent in the British Army that we proposed special hospitals exclusively for the care and treatment of the slightly wounded. When the seriously wounded and the slightly wounded were brought in together humane considerations made it practically impossible to avoid attending to the desperate cases first, an inefficient procedure from the military point of view, since neglect of the slightly wounded prevented the prompt return of many men to the front, and also in many instances not only temporarily but permanently diminished the available man-power by allowing the extension of infection to a possible

*Address before the Jefferson County Medical Society, Birmingham, Ala., January 6, 1919.

fatal termination. In order to carry our point, we demonstrated that it was possible to restore early a large per cent. of the slightly wounded by prompt excision of the wound and immediate suture. The aim was not less care for the seriously wounded, but more care for the slightly wounded.

How does this plan for the specialized treatment of the slightly wounded apply to civil practice? Every one knows that in major operations every precaution is taken to avoid possible mishaps, whereas too often catastrophies follow operations generally considered of but trivial importance. Thus statistics show that the majority of reported deaths from anesthesia have occurred in the "slight" operations. The removal of a wart or of a small tumor, a circumcision or a tonsillectomy may be followed by a severe—perhaps a fatal—hemorrhage or infection for the reason that these operations, being considered minor, have been undertaken without proper preparation and precaution by persons who have had little surgical experience and lack a sufficient knowledge of the underlying principles of surgery. As we all know, the invasion of infection does not require a large wound. A mere pin prick opens a sufficiently wide avenue for the host of deadly invaders. The calamitous results of penetrating wounds from rusty nails are familiar to us all. Thus, just as in the early days of the war the man-power was greatly reduced because proper consideration was not given to the slightly wounded, so in civilian life the available man-power is being constantly threatened by a like lack of consideration for minor casualties.

It may seem at first thought that the application of the aforestated principle of war surgery—care of the slightly wounded first—adds another to the long list of the inevitable brutalities of war. As a matter of fact, however, the outcome of the most rigid adherence to the rule has proved to be beneficent, since in the effort to increase the percentages of those who might be saved, methods of restoration of the apparently hopeless cases have been refined and expanded until only the man whose wounds make him *anatomically* incurable is considered a hopeless case. Hot chambers for producing reaction have been devised, transfusion of blood has become almost as commonplace as the application of the Thomas splint to a fractured limb. The choice of anesthetic and of operative procedure have been governed by the ever-present imperative demand for prompt and complete convalescence; and the greatest menace of all—the omnipresent infection — is yielding to the elimination of the prime factor in its promotion—the time factor—by the introduction of the mobile hospital unit.

As a result of all these refinements of technique and expansion of restorative methods more than 80 % of the wounded who survived long enough to reach a casualty clearing station were restored to the line.

In civilian surgery the problems of exhaustion, of infection, of fractures, of abdominal operations, of head and chest surgery, of anesthesia, differ, if at all, in degree only from the same problems in war surgery. May we not assume, therefore, that methods that conserve the desperately wounded soldier and those that quickly restore the slightly wounded soldier will also conserve and restore the surgical patient in civilian hospitals!

To recite in detail what the year has taught regarding the treatment of the infinite variety of the wounds of war would require many hours. Every possible anatomical lesion could be included in the list—wounds of the head and neck, of the chest, of the abdomen, of the extremities, fractures of every conceivable type; wounds invaded by ærobic and by anærobic organisms; wounds inflicted upon the comparatively fresh soldier soon after his first entrance into the trenches; and those received by the desperately exhausted soldier after rainy winter months of service in the mud of Flanders; wounds coming for treatment a few hours after they were received; and maggot-infected wounds in men who have lain for hours or days in No Man's Land.

It is obviously impossible to discuss here the application to civilian surgery of the lessons learned in the treatment of these manifold lesions. Nevertheless, a few outstanding problems may repay our brief consideration. It should be kept in mind, however, that probably not until a commission reviews the statistics can a final

recommendation be made as to the best procedures.

THE PROBLEM OF EXHAUSTION

Practically every wounded soldier is an exhausted soldier. To the extent that he is exhausted by the length of time he has been in the trenches, by the tenseness of the period of waiting and watching to go over the top, by the extent of his injury, by the length of his exposure in No Man's Land after his wound was received, to that extent is his resistance lowered. To a lesser degree, the civilian patient is exhausted by the disease from which he seeks surgical relief, by the length of time between the onset of the disease and the attempt at relief, by the conditions of his environment, etc. The obvious primary procedures then in proportion to the degree of exhaustion and its cause in the individual case comprise the relief of pain, elimination of worry and anxiety by proper environment, warmth, adequate food and water, fresh air, intravenous injections of soda bicarbonate and glucose, the transfusion of blood, and the promotion of sleep—natural, if possible, if not, induced by opium. It is a well known fact that when the wounded soldiers are removed from the shelled and bombed hospitals near the front to areas of greater safety, their condition is at once improved, as is pre-eminently the case when they are transferred from the war area to their home surroundings. It is reported that many cases of shell shock recovered almost immediately upon learning of the signing of the armistice. Wounds received while the troops are advancing in an attack usually fare better than those received during a retreat. For example, compare the casualty lists of the two battles of Cambrai in the autumn of 1917!

The morale of the civilian patient has a like bearing upon his welfare. If fear is eliminated, if a sure confidence in the outcome is established, much has been gained before the operation is even begun. On the other hand, every surgeon fears the outcome in the case of a patient whose belief that he is not going to recover can not be shaken.

THE ANESTHETIC

The choice of anesthetic lies among ether and chloroform, nitrous oxid-oxygen, spinal, regional and local anesthesia. During my service at a casualty clearing station of the B. E. F., I had the privilege of seeing much of the work of Captain Gregory Marshall, physiologist and anesthetist, an unusually keen observer, and of discussing the anesthetic problem with him. His experience has proved that while a patient may seem to be in good condition during and immediately after an operation under ether anesthesia, bad results often ensue; while both during and continuously after an operation of the same kind under nitrous oxid-oxygen the patient progresses better. By the use of nitrous oxid-oxygen one operator reduced the mortality rate of amputation of the thigh 50 % and of abdominal operations 30 % with the same operative technique.

Not only for long major operations but for painful dressings in the wards nitrous oxid-oxygen proved its beneficence. So generally was this the experience of surgeons at the front and at the base hospitals that nitrous oxid-oxygen became the anesthetic of choice wherever it was available, the only limitation to its practically universal use being at first the lack of an adequate supply of the gas, and after the manufacturing plant was established in France the lack of a sufficient number of adequately trained anesthetists.

Captain Marshall's investigations have shown that spinal anesthesia is of value excepting in rush periods *provided the subsequent fall of blood pressure*—the invariable immediate result of spinal anesthesia — can be minimized, and also provided that the psychic factor — the patient's state of mind in being cognizant of the operative procedure — can be minimized or eliminated.

In cases of extreme exhaustion with hemorrhage, the fall in blood pressure may be avoided by a preliminary transfusion of blood and the psychic factor overcome by morphin, by nitrous oxid analgesia, or just enough anesthesia to eliminate psychic impressions. With these precautions shockless operations may be performed also under local or regional anesthesia.

If the consensus of opinions of surgeons who have had the vast experience of work in casualty clearing stations during rush periods is that nitrous oxid-oxygen conserves the exhausted soldier,

while ether or chloroform increases his danger, should the beneficence of nitrous oxid-oxygen be denied to our civilian patients?

OPERATIONS

As to the operation itself, it did not require much time to discover that in the field and in the base hospital as in the civilian hospital there is no substitute for good surgery. No antiseptics—and many were tried — equaled the results of the good surgeon.

The searchlight of battle emergency distinguished the essentials from the non-essentials. In dressing stations, in caves and dugouts, in barrack-like casualty clearing stations, with improvised substitutes for much of the elaborate equipment of the operating rooms of our civilian hospitals, results which we are proud to quote were achieved. As a Frenchman has aptly stated, "a surgeon can not be improvised." Are we at home not in danger of losing the proper balance between the workman and his tools?

Of prime importance was the first surgical contact with the wounded. Therefore to the casualty clearing stations only the most experienced surgeons were sent, for there the ripest judgment was needed as well as the most efficient technique. It was inevitable that many mistakes would be made — often a good surgeon was found in an administrative position and a good administrator with less surgical experience was assigned to the operating room. Such mistakes are at times inevitable in the stress of rush periods. It is also possible that the keen surgical judgment which assures an accurate diagnosis may not coincide with the possession of a good operative technique. Nothing could more clearly demonstrate the need of the right man in the right place than seasons of stress during heavy offenses when the procession of wounded was continuous day and night, when operating teams worked in relays, when instant judgment as to the required procedure in each case was demanded in order that the waiting wounded might not be too long delayed, when a mistaken judgment would mean the permanent loss of a fighting unit.

Why should not a like differentiation of functions be applied to the greater efficiency of the civilian hospital, where the surgeon of ripest judgment, of widest experience could best benefit the patient by exercising that judgment in his behalf in the operating room, by overseeing and directing the procedures of the technician, of the anesthetist, of the assistants; in the wards by making certain that every harmful contact that might interrupt convalescence is abolished.

Never more emphatically than in the military hospital has the importance of considering the patient *as a whole* been so clearly demonstrated. Equal to the beneficence of the Thomas splint on a fractured thigh is the beneficence of anociated environment at every step of the patient's progress. As in the anociated operation every rough contact with instrument or hand is eliminated, so in the whole path from consultation to hospital, to convalescence, every possibility of rough contact with office attendant, hospital attendant, intern and nurse must be eliminated. The value of the protected operation and of environmental influences have been demonstrated on a vast scale in the base hospitals in France. Shall we do less for the patients in our civilian hospitals?

ORGANIZATION

Whatever difficulty any of us may have experienced in adjusting ourselves to the restraint of army life, it did not take long to appreciate the value of proper organization and discipline. Why should not a like organization be of value in civil life? Assuredly much would be gained by the establishment of organization and discipline similar to the military organization in our medical schools and hospitals. Of special value would be the application of the military principle of permanent recognition of work already done, as well as of work actually in progress. In the army a man wins a promotion and his new grade remains; and it can not be taken away from him. The element of professional jealousy is thus removed; his position assured, it matters not who else may receive a like promotion. Why should not our medical organizations at home in like manner recognize the work of individuals by some system of promotion or by increased opportunity? Merit generally wins its way, but too often it may be smothered by the difficulties in its path; or its highest de-

velopment may be prevented by the tenseness of the struggle for recognition. It is true that no organization has ever been proof against chicanery and politics—yet though incompetent individuals may at times gain important positions, they can not retain them and eventually are replaced. It is true that even in the army while some men have received early recognition of their achievements, in other instances of apparently equal worth the recognition has seemed delayed. Nevertheless, the underlying principle is a sound one, and if the medical profession could organize in such a way that earnest, hard workers may receive appropriate recognition, those who are producing results of scientific value recognized in one way, those whose ability is along administrative or organizing lines in another, etc., then the profession as a whole would inevitably be advanced. I believe that almost without exception every medical man who has seen military service will return convinced of the value of organization and discipline. Surely in some way the medical profession at home also should gain along this line.

Moreover, the community as well as the individual would benefit by the establishment of an efficient organization. The value of the elimination of the time factor in the treatment of the wounded in war, with the resultant bringing of casualty clearing stations nearer and nearer to the front and the final development of the mobile hospital unit leads us to contemplate with something akin to dismay the crying lack at home, so far as the small community is concerned. If our cities may be considered base hospital centers, where are our casualty clearing stations, our mobile hospital units wherewith to meet the surgical and medical casualties in the outposts—the small town and farming community? The problem of a "state-wide hospital service" is a peculiarly pertinent one today in connection with the proposed legislation for health insurance. As in war, the prime need in the civilian community is to put and keep the greatest possible number of individuals "in the front line." The problems that confront us are the same as those which met us in the Army service—conservation and restoration.

To accomplish these ends the Army medical organization begins with the raw recruit, and never leaves him until his discharge from the Army. We know the result of this enforced hygienic regime: that the American Army has made an unsurpassed record for health, cleanliness and vigor. Why should not a like regime be enforced at all times upon our youth? If periodical medical inspections of city and country schools were made and definite hygienic rules outlined to meet the needs of each pupil, it would never again be necessary to reject as physically unfit almost 30 % of our young men of draft age!

In a recent letter from France an Army surgeon makes the following query: "I suppose you know what a very low venereal rate we have over here, most of it to be attributed to the absolute efficiency of timely and properly taken prophylaxis, but what I imagine hasn't occurred to you is that it isn't a question of cleaning up the Army, so we won't infect people when we come home, but it's up to you people at home to clean up the country so it will be fit for us to come home to! I also don't see why it isn't up to us to establish some system of regular prophalaxis in civil life, after its worth and effectiveness have been so indisputably proved here. Lieutenant-Colonel George Walker says that except for a few congenital syphilitics, we could wipe out venereal disease in two generations, if universal prophylaxis could be attained."

The greatest, the most pertinent question which confronts us, therefore, especially those of us who have experienced and seen the results of army medical organization in its power to conserve and restore the fighting man, is this—to what extent can the Army medical organization be adapted to meet civilian needs, that not only may the returned soldiers suffer no loss, but their wives and children receive the same opportunity for the promotion of individual health, the assurance of a sanitary environment, the protection against pestilence and disease, the speedy relief in accident and emergency, restoration after illness.

Would the course of the present epidemic have been altered had we had a pseudo-military medical organization to meet it?

DUODENAL FISTULA, WITH CASE REPORT*

By George A. Hendon, M.D., F.A.C.S., Louisville, Ky.

The subject of duodenal fistula, traumatic in origin or otherwise, is accorded scant consideration by the majority of surgical authors. Careful search of available literature reveals the record of but few such cases, abstracts of which are presented in connection with some personal observations.

When one considers the anatomic location of the duodenum, and especially the proximity of the retro-peritoneal fixed portion to certain other intra-abdominal viscera, it seems remarkable that the organ so frequently escapes injury during the execution of surgical procedures for hepatic, renal, gastric and cholecystic pathology. On the other hand, it must not be forgotten that duodenal fistula may be the result of minute perforating ulcer without the infliction of trauma. Regardless of its mode of origin, duodenal fistula represents an exceedingly dangerous lesion from the standpoint of the patient, and may present perplexing therapeutic problems for the surgeon.

Based upon observation and experience, Palmer states that duodenal fistulæ following operative procedures "are neither the rare nor the simple, benign affairs the silence of the professional pen might lead one to conclude." Edgerton observes that the "result may be a short running, rapidly fatal duodenal fistula;" and Pannett adds that so far as can be ascertained from the literature of the last ten years, "a duodenal fistula never heals without surgical aid, and if left, it is invariably fatal; moreover, that death may be exceedingly rapidly; recovery from a duodenal fistula, even with adequate surgical treatment, is a rarity."

In my opinion the foregoing quoted therapeutic views are entirely too pessimistic. If the character of the fistula be recognized sufficiently early, it should be amenable to treatment by the intelligent application of modern therapeutic principles. In making this statement, however, I am not unmindful of the important clinical facts: (a) that inanition may occur much more promptly in the presence of duodenal fistulæ than those involving other portions of the intestinal tract; (b) that marked tissue dehydration may early ensue; and (c) that there may be a rapidly increasing and fatal toxemia from systemic absorption of deleterious products.

The local manifestations resulting from discharge of the duodenal contents, which include the gastric, hepatic and pancreatic excretions, upon the cutaneous surface may be extremely annoying to the patient. The digestive power of these secretions upon the tissues is well understood. "Digestion of the skin of the abdomen and back is so rapid and unrelenting as to make the life of the patient a hardship—to himself because of discomfort and pain, and to the nursing force because of the frequency of the needed dressings."—(Palmer.) For the same reason erosion of the sinus may occur and be followed by extensive hemorrhage. Necrosis of the fatty tissue has been observed and peritoneal involvement may ensue from destruction of protective adhesions by the digestive process.

CASE REPORT

Mrs. K., widow, aged 70 years, was the mother of eight children, the youngest 32, the oldest 45. This patient was first operated upon nine years previously for acute cholecystic empyema with calculi; a cholecystostomy was performed, several choleliths removed, and adequate drainage was instituted.

She recovered within three weeks sufficiently to return to her home, but a biliary fistula which discharged a large quantity of bile each day persisted for a period of one year. Her general health, however, during that time remained good. She suffered no discomfort excepting that incidental to the biliary discharge. After the fistula closed she appeared to have regained her normal health; but as a result of the operation a small hernia developed which apparently gave her little discomfort.

About the first of March, 1917, at intervals of two weeks, she began having acute epigastric pain, simulating the so-called "gall-stone colic," associated with abdominal distension, nausea and vomiting. During the last thirty days the attacks had increased in frequency to about two each week. Each attack was associated with chills and temperature elevation to 106° F., followed by profuse perspiration. The attacks were independent of the ingestion of food, i. e., they occurred regardless of whether the stomach was empty or contained food.

*Read before the Southern Surgical Association, Baltimore, Md., December, 1918.

On April 21, 1917, she entered the hospital for operation upon the theory of recurrent cholelithiasis. Celiotomy disclosed a healthy looking cholecyst attached to the abdominal wall by its fundus; no calculi were found; a cholecystectomy was performed and radical operation for cure of the hernia attempted. A rubber drainage tube was attached to the stump of the cystic duct. The second day after the operation she had a chill and temperature of 103° F., followed by a sudden and copious discharge of pus and bile. Convalescence thereafter progressed normally and she went home three weeks after the operation. The tube was removed at that time and bile and mucus continued discharging through the drainage track. The discharge would cease at irregular intervals and about twenty-four hours later she would have a chill and her temperature would reach 106° F. Although there was no icterus it was thought there was an obstruction in the common duct which resulted in the absorption of bile, or that its escape externally was interfered with in some way.

In August, 1917, the patient was again taken to the hospital with the intention of making a permanent fistula. Under local anesthesia dissection was made downward to the stump of the duct (or what was supposed to be) and a soft rubber sutured in position with gauze packed around it. She went home within a week after this operation. So long as the sinus discharged freely she felt well. However, the discharge which occurred around the tube was greater than through it. The tube was extruded in three weeks, when she again began having chills, followed by high temperature as before.

On October 23, 1917, she was again taken to the hospital with the idea of making a second attempt to establish a permanent fistula for the escape of bile, based on the theory that the chills and fever were produced by absorption of proximate biliary principles. The chills were peculiar in that they were exceedingly severe, followed by temperature of 106° F. and profuse perspiration, but without any evidence of exhaustion. The next day after an attack, if the fistula was discharging, she was able to attend to her ordinary household duties as if nothing unusual had happened. October 23, under local anesthesia, with a probe in the fistula as a guide, dissection was made which seemed to lead into a small cavity about where the stump of the cystic duct should be. As soon as this pocket was reached there occurred a "gush" of thin, viscid material mixed with bile. A drainage tube was inserted into the pocket and gauze packed around it.

The next day there began copious discharges of duodenal contents which consisted of bile, mucus, and partly digested food. The volume of the discharge was so great that it quickly soaked through the dressings and soiled the mattress upon which the patient lay. The dressing had to be changed every two hours. Oakum pads were used to absorb the discharges. The skin was protected with rubber dam and the fistula was packed every day with gauze strips saturated with compound tincture of benzoin. The discharge grew rapidly less and within five weeks from the date of the last operation the fistula had entirely closed. The patient left the hospital and there has since been no recurrence of her former trouble. More than a year has elapsed and she has remained in good health ever since.

It is my opinion that the fistula in this case had its origin in an ulcer of the duodenum which destroyed the mucous and muscular wall and produced a pin-hole leak in the peritoneal covering; that the pain and chills and fever were the result of the escape of a few drops of duodenal contents into the surrounding tissues; that the improvement of the patient after the chill was due to a temporary closure by lymph deposits over the leak, and that the subsequent chill and fever were the result of dislodgment of the protecting patch of lymph. This long-continued and intermittent escape of minute quantities of irritating material resulted in the formation of a defensive system of protective adhesions. At my last operation it is evident that a rent was made at the site of the ulcer, which accounted for the sudden and copious discharge of duodenal contents. The patient, however, was fortified against disaster by the adhesions already referred to.

I think it is a little singular that we were able in this case to control the discharges by plugging the opening in the intestine with gauze saturated with benzoin. And we were extremely fortunate in securing complete recovery by this simple procedure. I am convinced now that the cholecystectomy which I did was a superfluous operation. If I had performed a gastroenterostomy instead, the patient would have been cured of the duodenal ulcer without the subsequent suffering which followed the cholecystectomy.

I recall one other patient who was operated upon for cholelithiasis and about sixty calculi removed. A fistula persisted, and as long as the discharge continued she was comfortable, but when it ceased she had violent pain and gastric disturbances. Six months later I did a cholecystectomy. The cholecyst looked perfectly healthy. The common duct was drained by a tube attached to the cystic duct. The drainage was very free, but apparently consisted of bile only. At the end of three weeks the tube was removed and the patient was cured.

My theory now is that symptoms simulating cholelithiasis occurring subsequent to the removal of biliary calculi are due

to ulcer about the ampulla of Vater on the duodenal mucous membrane. These ulcers are caused by the contact of infected bile. They are cured by drainage incident to operation. And I think the cases that are relieved of symptoms following drainage of the cholecyst in which no calculi are found also belong in the same class.

According to the literature Van Vranken (1894) was among the first to direct attention to this subject. He cites the case of a male aged forty-five who had a large abdominal abscess of obscure origin (not appendiceal) pointing over the left Poupart's ligament. Incision and drainage revealed that the abscess cavity communicated with the descending colon. After a month of fecal drainage urine also appeared and persisted for several weeks. The fistula finally healed completely.

In 1914, Mayo reported three fatal cases of duodenal fistula following right nephrectomy, one operated upon by himself, the remaining two by other surgeons with whom he was associated. The fistula developed a few days after operation, and death occurred within two weeks. The following year the same author recorded the successful closure of a duodenal fistula which also followed right nephrectomy. The operation was performed transperitoneally through a right rectus incision, the fistula being closed transversely and protected by an omental graft. Summers and Canarel are quoted as also operating for similar pathology by the transperitoneal route.

In Thevenard's case a duodenal fistula developed ten years after nephrectomy in a persistent sinus, probably of tuberculous origin, which had existed since the nephrectomy, with intermittent abscess formation.

Pannett cites a case in which four days after development of a duodenal fistula the condition of the patient was desperate. Immediate celiotomy was performed under Crile's anoci-association technique of local anesthesia with a small amount of ether. The duodeno-jejunal flexure was identified, an eight-inch loop drawn through the wound, and a lateral anastomosis made between the afferent and efferent limbs. A rubber catheter was anchored into the efferent segment, the bend of the loop being then sutured to the parietal peritoneum and the wound closed. There was no shock. Peptonized milk and egg were injected into the intestine through the catheter before the patient left the operating table. This method of feeding was continued regularly and food was also given by the mouth. The patient rapidly improved and discharge through the fistula diminished. Ten days later no bile staining could be seen; the next day the jejunostomy tube was removed, and no leakage occurred. The author states that recovery of the patient was complete in about six weeks.

Davis records in detail a case of duodeno-ureteral fistula of spontaneous origin. The patient, a male of twenty-nine, had complained four years of dull, aching pain in the right flank, with pollakiuria, extreme urgency, and bladder irritation. Acute attack of abdominal pain one year previously; appendectomy without relief. Bladder symptoms became aggravated, and the urine contained greenish purulent-looking material. Roentgenoscopy, cystoscopy, ureteral catheterization and pyelography; diagnosis functionless right kidney, probably resulting from previous inflammation.

Nephrectomy August 6, 1917: A knuckle of duodenum was pulled upward by traction on kidney, and a small area of duodenum (about 1 sq. cm.) was intimately associated with cicatricial tissue, including ureter, pelvis and vessels "in an indistinguishable mass." As the duodenum could not be dissected free without danger of injury, a small button-shaped piece of scar tissue (about 2 cm. in diameter), including the site of the duodenal attachment, was severed from the larger cicatricial mass and left attached to the duodenum, as was also a portion of the fibrous wall of the kidney pelvis which was incised during the operative steps. The scar pedicle was then clamped and the kidney removed.

On the fourth day after operation there appeared a profuse watery discharge having the odor of duodenal contents and producing extensive excoriation of the skin. The discharge ceased on the twelfth day and there was no further skin digestion. The wound slowly granulated and healing was complete in seven weeks.

The author remarks that this case is doubly interesting in that it further em-

phasizes the danger of duodenal injury during nephrectomy, and presents a most unusual (and apparently unique) condition, viz., a definitely demonstrable fistula connecting the duodenum and ureter which existed prior to the execution of any operative procedure.

"In view of the history of intermittent attacks of chills and fever, accompanied by pain in the right flank; of the evidence found at operation of an old inflammatory process involving the peri-renal tissues; and of the fact that the duodenum, excepting at one point, was normal in appearance and consistency, the most plausible explanation of the origin of the duodeno-ureteral fistula is that the latter was preceded by a perinephritic abscess, which went on to spontaneous cure by rupture into both duodenum and ureter. The condition can not be explained by an embryonic defect on account of the diverse origins of duodenum and ureter, the former arising from entoderm, and the latter being an evagination from the Wolffian duct, which is derived from mesoderm. It was fortunate that during the operation a good exposure was obtained, because the knuckle of soft-walled duodenum, when pulled upward alongside the dense scar tissue at the hilum, could not be palpated, and was discovered only by inspection. It might readily have been clamped and severed with the pedicle, particularly if the necessity for hastily controlling hemorrhage through an inadequate incision had arisen. The most interesting feature was the immediate cessation of bladder symptoms on the day after operation, the overnight return to normal of a bladder which for two and a half years had been a constant source of distress. The only reasonable explanation is that the irritability was due to the constant presence of small amounts of duodenal content, and presumably trypsin, in the bladder."—Davis.

During cholecystotomy Gardner found a mass of adhesions involving the liver, cholecyst, stomach, duodenum, and omentum. The cholecyst was small, apparently mostly scar tissue, and not particularly inflamed. Extending from the fundus of the viscus to the duodenum was a fistula the diameter of a lead pencil and imbedded in the fistula was a calculus the size of a large pea. This was "milked" into the cholecyst. The common duct region was a mass of dense fibrous adhesion, and as the duct was probably obliterated it was deemed unwise to perform cholecystectomy and destroy the fistula; and drainage of the cholecyst might mean a duodenal fistula. Two concretions were removed and the cholecystic incision closed. The patient's temperature promptly receded to normal and the icterus subsided. On the ninth day the wound discharged profusely a thick, foul pus, which later became thin and excoriated the skin. This discharge continued for about a month. There was in this case probably a subphrenic abscess with leakage through the cholecyst and fistula. The patient finally recovered.

Palmer records two cases of duodenal fistula cured by expectant treatment, which he says contemplates several objects: (a) protection of the skin and the tract itself against the digestive action of the excretions; (b) introduction of fluids and nourishment in quantities sufficient to maintain not only life but also the reparative power of the tissue; (c) reduction in the amount of gastric and intestinal excretions; and (d) neutralization and dilution of these excretions. As protective measures, he advises a low melting point paraffine applied hot to the skin, or a solution of pure gum rubber in benzine; the sinus is injected with liquid petrolatum and zinc oxid ointment; liquid paraffin in large doses is also administered by the mouth. Ten per cent. glucose solution with sodium bicarbonate may be used by rectum. A small amount of tincture of opium will aid in controlling rectal spasms. Acid-producing food must be avoided and alkalies administered. Atropin and epinephrin have the greatest inhibitory effect upon the gastric excretion. Milk, fats and oils may be used. Dilution and neutralization of the excretions may be further accomplished by slightly alkaline solutions applied to the sinus through a rubber catheter.

His first patient was a male of fifty-five who had undergone gastric resection for carcinoma. Duodenal fistula developed on the eighth day; there was an abundant discharge of bile and pancreatic fluid; abdominal skin digestion was rapid and extensive. Discharge ceased after eight days under atropin and sodium fluorid; solution of the latter also used for wet abdominal dressing and injection into sinus. Paraffin frequently painted over the skin as protective coating. Patient discharged cured in fourteen days.

The second patient was a male of seventy-four operated upon for cholecystic pathology. There was a markedly contracted cholecyst with an impacted concretion in the papilla of Vater which was removed by the trans-duodenal route. On the sixth day the drainage became sud-

denly profuse and caused extensive digestion of the abdominal skin. Dressings had to be changed every two hours and on two occasions were saturated with blood. Fistula healed in twenty-eight days under expectant treatment.

In Cheever's case a duodenal fistula developed on the fifth day after operation for duodenal rupture. There was considerable tissue digestion and skin irritation. Continuous irrigation of the sinus with sterile water through a rubber tube was inaugurated and continued for five days and nights. The digestive juices were thus kept diluted and immediate cessation of the destructive process was noted. Recovery in six days.

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IMPORTANT FACTORS IN THE POST-OPERATIVE CARE OF COMPLICATIONS FOLLOWING ABDOMINAL SURGERY*

By Arthur W. Ralls, M.D.,
Captain, M.C., U. S. Army,
Gadsden, Ala.

In post-operative care the same degree of skill and judgment are required as is necessary in perfect operative technique. The unpleasant factors we find hardest to control impress us most.

The mortality rate in many hospitals, and more especially the one having a small incoordinated staff, is high on account of poor technique. It is high again in some institutions because the post-operative care is entrusted to a personnel not well versed in the proper procedure. The patients' stay in the hospital is often made lengthy, and in some cases life jeopardized through some avoidable complication.

It is clearly evident that low-grade infection and hemorrhage are responsible for the vast majority of complications following abdominal surgery. Some of the complications mentioned below are also common to surgical procedures other than the abdomen, but in this grouping for abdominal section, each item has a rather special relation to abdominal work.

PROTRACTED VOMITING

Since the more liberal use of gas-oxygen anesthesia, nausea due to residual ether in the stomach has been diminished. In simple ether-vomiting, large quantities of warm water as soon as nausea begins and plenty of fresh air are important. Repeated lavage may be necessary. In some cases of extreme nausea dilatation of the stomach exists, due to trauma, toxins, fermentation and the taking into the stomach of air. The patient may get some relief by being turned on the abdomen at intervals. Pituitrin offers the best relief in acute dilatation. If fermentation is present, mercury in small doses gives good results. Nausea may be present following dehydration of the tissues. In this instance saline enemata should be used.

POST-OPERATIVE SHOCK

This is usually due to extensive trauma, long operations, the anesthetic and the loss of blood. We refer to surgical shock here as separate from a frank hemorrhage. We do not attempt to define shock. Mann[1] speaks of it as "a loss of circulating fluid." Dalley[2] claims that the nerve is either excited or depressed by any abnormal stimuli, and that, therefore, shock can not be comprehended except in its relation to the nerve cell. Some believe that surgical shock is closely allied to fat-embolism in the pulmonary structures. For this condition which presents such a regular and clear picture, quick action is necessary. Heat applied to the body, recumbent position, and the use of morphin should be practiced. A venous infusion of saline may be tried, and if not beneficial, transfusion of a properly-grouped blood should be made. If possible, the patient should take large quantities of sweetened fluids by mouth. Crile

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and Watkins[3] have given valuable suggestions in regard to the use of hyoscine and other sedatives prior to operation in the so-called neurotics. Pain has a direct bearing in the production of shock. Hence the necessity for opium the first twenty-four hours after operation.

The lessening of trauma is possible through the use of rubber pads in the abdominal cavity instead of gauze. If gauze is used, it should be wet in saline before touching the viscera.

HEMORRHAGE

In external fields, such as amputation of the breast, the bleeding is self-evident. In closed cavities, as the thorax and abdomen, a sudden frank hemorrhage gives a drop in systolic blood pressure, rapid, thin pulse, great thirst, air hunger, and glazed skin. A tight wick into the cavity, in the words of W. J. Mayo,[4] "serves only as a plug," and will not be an index to bleeding. In order to determine a concealed hemorrhage, or that type known as exemia also, a blood picture should be had before and after operation. Polok[5] and Heffter advocate that hemoglobin percentage, while cell count, and blood-pressure reading be known immediately before operation. The blood-pressure is taken after operation and every two or three hours for 48 hours. It is then easy to get a picture of the laboratory findings for comparison with pre-operative findings. In hemorrhage, there is a decrease in systolic pressure and pulse-pressure; there is a decreased hemoglobin per cent. and an increased leucocyte count. A low hemoglobin value indicates that the patient is increasing the volume of blood at the expense of the tissue fluids. While in surgical shock the hemoglobin is usually maintained, due to the concentration of blood.

In a frank bleeding in the abdominal cavity, a reopening of the wound and picking up of the vessels is necessary. In the slow type of bleeding, as may occur in gastroenterostomy, a blood transfusion is usually all that is necessary. A solution of acacia in saline solution, and having the same viscosity as blood, has been used to advantage by some, but its use is as yet restricted. Blood transfusion is not practiced so extensively as its effectiveness warrants in conditions associated with hemorrhage.

POST-OPERATIVE MANIA

This condition occurred in one-thirtieth of 1% of the writer's abdominal cases covering a period of fourteen years. In each instance the patient belonged to a type of psycho-neuroses and had a previous family history of insanity. In each case the operative field was clean. Such cases were best controlled by chloral and bromids, and the symptoms disappeared on the third and fourth day. In each case the maniacal symptoms began about twelve hours after coming out from under the anesthetic. Hyoscine in small doses for twenty-four hours previous to operation is helpful in such cases where a neuropathic or psychopathic history is present.

SEPTIC MANIA

This is found in a small per cent. of cases of diffuse septic peritonitis. This type of mania does not appear 'till a true septicemia exists. The case is usually fatal. Free drainage and cleansing of the septic focus, through excretory elimination, and the ingestion of large quantities of fluids to dilute the toxins, are indicated. Cold wet packs are helpful as a febrifuge.

GAS PAINS

This symptom, apparently harmless, is very troublesome. Emge,[6] in a series of 100 cases, has demonstrated that purging pre-operatively produces in many cases gas pains. He cites the emergency abdominal case, whose abdomen is opened without pre-operative purging, as an example of intestine that does not tend to escape from the cavity on account of being distended. In reverse peristalsis, where the muscle gradient is disturbed, gas pains are common. These cases are benefited by early feeding to restore normal peristalsis. The use of the rectal tube and saline proctoclysis will usually remove the gas unless obstruction exists. If gas pains persist after the above simple remedies have been tried, intestinal obstruction should be suspected. Crile and Bloodgood were among the first to discontinue the use of pre-operative purging.

SEPTIC PERITONITIS

None of the above-named complications has an entity, but is a symptom of a beginning peritonitis. The intensity of the symptom depends upon the virulence of the infection. It is the writer's belief that some form of peritoneal toxicity causes more so-called complications following abdominal section than all other factors except hemorrhage. Nyulasy,[7] of Perth, gives the two constants of septic peritonitis as (a) intestinal paralysis, and (b) toxemia. Thorough drainage of the infected focus is most important. If the patient is a female, drainage through the cul-de-sac by posterior section is desirable. Noland and others report excellent results with the Carrel-Dakin treatment.

The Murphy-Ochsner treatment should be begun early, viz.: fresh air, general support, Fowler position, and proctoclysis. If paralysis of the intestine occurs, peristalsis should be stimulated by calomel, salts, enemata, pituitrin or eserin. If this does not benefit, a cecostomy should be resorted to in order to eliminate the proteose ferment which is so fatal in these cases. If the lesser peritoneal cavity is involved, a jejunostomy may also be necessary.

When paralysis of the intestine is suspected it is essential that morphin be not given. The point we wish to stress is the necessity of doing cecostomy, and doing it early.

ABDOMINAL ADHESIONS

It is well known that lessened or inhibited nerve supply is favorable to the production of adhesions. Corbett[8] by experiment showed that the mild adhesions are benign in their intent and often of good purpose. It has been learned that sepsis accounts for most adhesions, and sepsis plus trauma creates the denser type. That "we do not become good surgeons 'till we learn to quit draining," is an axiom born of the present surgical age.

Continued irritation of tubes and wicks increases adhesions. It is rarely necessary to drain any abdominal case by tube or wick longer than six or seven days. Omental adhesions give very little trouble on account of the mobility of this tissue. When working in septic fields two agents are helpful in preventing adhesions. Ether locally, and the cautery. Many adhesions absorb in a few months and the surgeon should not be hasty to operate for adhesions unless they threaten obstruction.

SUMMARY

The points we feel deserve stressing are:

1. Drain less.
2. Do aseptic surgery.
3. Use more diligence in leaving a field free from oozing.
4. Have a full knowledge of the laboratory blood picture, which serves as a guide to the patient's progress.
5. Traumatize as little as possible, and especially in septic fields.

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DIFFERENTIAL DIAGNOSIS OF URETERAL STRICTURE*

By Lee F. Turlington, M.D.,
Birmingham, Ala.

Recently it was my good fortune to spend something more than a month in Baltimore with Dr. Guy L. Hunner. It is the opinion of leading men all over the country that Dr. Hunner has given to the profession more knowledge on urology in women than any other man or set of men. His discovery of and operative procedure for "Elusive Ulcer of the Bladder," or Hunner's ulcer; his discovery that ureteral stricture is one of the commonest ailments of women; and the curative treatment worked out by him are without doubt the greatest contribution to urology in women since the cystoscope has been in use. Dr. Hunner, having made such a name forself, draws his cases not only from a large number of general practi-

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tioners and specialists in and about Baltimore, but from localities all over the United States. Since he used me as an assistant during my stay there, I saw with him practically all of his urological work. He sees on an average of forty cases of ureteral stricture a week. After observing so many cases and following them up as long as I had the opportunity, I shall make bold to read before you a short paper, embodying in it the points that I think will help me in differentiating ureteral stricture from the many ailments with which it has been confused in the past.

The symptomatology may be very simple, pointing directly to the upper urinary tract, or it may be very complex, completely overshadowing the origin of all the symptoms.

The patient suffering from stricture of a ureter, as a rule comes complaining of a pain. This pain may be only a dull, heavy feeling in the kidney region with an occasional sharp pain radiating down the course of the ureter. Quite often this radiating pain is associated with a desire to void. The pain may be located at a point just medianward from McBurney's point or at an analogous point on the left very similar to the pain found in the lower right quadrant when a chronic or subacute appendix is present.

Palpation of a tender ureter at this point where it passes over the brim of the pelvis quite often brings on a desire to void. The local pain associated with ureteral stricture is most often located deep behind Pouport's ligament or in the ovarian region. No matter where the point of most constant pain be located, there is quite frequently the radiating pain from kidney to bladder. This radiating pain is at times the colicky pain associated with the attempt to empty the kidney pelvis through a more or less obstructed ureter. The extent of this is in proportion to the extent of the obstruction.

Referred pain from a ureteral stricture has no definite location. It may be to the kidney region only, or to the hip, or down the thigh and leg. Just before I left Baltimore I saw a patient investigated who located her pain in the left side at a level of the eighth rib in the anterior axillary line and said, "Deep, right in there." On having the kidney pelvis distended by injection through a renal catheter, she exclaimed that this pain brought on by the distension was just the same as the old pain, only much worse.

Early in the history of a case pain may manifest itself only at the menstrual periods, later annoying the patient more or less all the time, becoming worse at each menstrual period. Since the site of the pain is most often in the ovarian region, it is naturally called dysmenorrhea. Later the colicky attacks occur with more or less frequency and they become very similar to the colic occurring with the passage of ureteral stone. During these attacks quite often blood is seen in the urine.

What has been called essential hematuria may be the only symptom of ureteral stricture. Several of these cases, three of which I saw, have been observed by Dr. Hunner and have been cured by dilatation of the ureteral strictures.

Almost without fail some type of focal infection, or history of some bad focal infection, will be found in a patient with ureteral stricture. Tonsils and adenoids are most common in children and tooth abscesses and infected sinuses in adults. This is so common that a focal infection in a case where there are vague abdominal or pelvis symptoms should lead us to suspect the ureters. Symptoms of ureteral stricture are most likely to become exaggerated with an acute exacerbation of a focal infection.

We would naturally think that pelvic inflammatory disease would be a very predisposing factor, but strange as it may seem, this is not the case. Remarkably few of the patients found to be suffering with ureteral stricture give any evidence or history of pelvic inflammatory disease.

Dr. Hunner has found almost without fail that persistent cases of pyelitis where stone of the ureter or kidney or tuberculosis is not present have ureteral stricture. In a recent paper in which he mentions having tested seven cases of pyelitis developing during pregnancy or puerperium, he says that six of the seven were found to have stricture of the ureter. He did not feel sure, however, that a study of a larger number of such cases would show quite so high a percentage of stricture. Stricture of the ureter can not be ruled out by the absence of pyuria because laboratory findings show that pus-forming

organisms were not found by smear or culture in 33 per cent. of the cases where urine from the ureteral catheter was cultured. It is thought that at the present time far more than 33 per cent. of the cases are without infection, for the reason that the cases are being diagnosed earlier.

In cases of long standing any possible symptom referable to the alimentary tract is likely to be found. A ureteral stricture may be the cause of as much gastro-intestinal distress as a chronic appendicitis or gall-stones. In advanced cases, and occasionally in early ones, the predominant symptoms may be those coming from the bladder, i. e., frequency of urination and a feeling of pressure in the bladder. Some cases complain of exaggerated pain at the old point during defecation if the bowels be constipated.

I have said that renal attacks, or exaggerated symptoms, may be brought on by a lighting up of a focal infection. Similar attacks may be brought on by taking an unusual amount of exercise.

PHYSICAL EXAMINATION GIVES SOME VALUABLE DATA

If a ureteral stricture has existed long enough to give a hydronephrosis, a tender mass may be felt in the kidney region on deep palpation. Even in the absence of hydronephrosis a tenderness is most often revealed by this deep palpation in the kidney region. An area of tenderness can almost always be found just where the ureter crosses the pelvis brim. This tenderness can be traced up the course of the ureter, as a rule, to a point above the level of the umbilicus. The greatest amount of tenderness is to be found on vaginal examination in the region of the ureter in the true pelvis. Palpation here is complained of bitterly, and the patient will say that you have found the place that has hurt her so much. It is natural to expect most tenderness here because about 90 per cent. of ureteral strictures occur in a region lying between the bladder and 7 c.m. above it. This is also the reason for painful defecation of constipated stools. Quite often the ureter can be palpated as a small wire-like structure diverging from the base of the bladder.

If any of the foregoing symptomatology or physical signs arouse suspicion as to the upper urinary tract, the cystoscope should be used. On cystoscopy, a positive diagnosis may be made or the ureter can be ruled out of the question.

Most often in dilating the urethra preparatory to introduction of the cystoscope, the ureteral stricture cases will show a more or less definite stricture of the urethra near the inner orifice. This will give considerable resistance to dilating above a No. 6 Hagar dilator, which is 6 mm. in diameter. Where there is no infiltration of the urethra it can be dilated to No. 9 with little difficulty, 10 per cent. cocaine being used. Finding this urethral stricture, 'though it is not found constantly with ureteral stricture and may be found independent of it, leads me to be more suspicious of the upper tract. The bladder wall, if there be a pyelitis present with ureteral stricture, will often show some congestion. The trigone is often congested where there be ureteral stricture even in the absence of pyelitis. Frequently the ureteral orifice will be round instead of slit-like, the margin bulging indicating an edema of the bladder wall portion of the ureter. None of these bladder signs are constant and quite often all are absent, but most often one or more are present with ureteral stricture.

Now comes the test by which we gain decidedly the most information. Dr. Hunner on various occasions has described his technique. He takes an ordinary renal catheter No. 8 or 9 and gives it a wax tip by dipping it in melted bee's wax. A bulb of wax from 3½ to 4 c.m. in diameter is laid on the catheter about 10 c.m. from its tip. Before starting to introduce the renal catheter, the patient should be instructed to call out at any time during the proceeding when the "old pain" with which she has suffered previously is reproduced. Then through the Kelly cystoscope the tip is introduced into the ureter. As a rule, if stricture be present, the catheter tip is somewhat obstructed as soon as it has entered for 2 or 3 c.m. This may be due to the tip's butting against a fold of the ureteral wall. To make its passage easier, the stillet is withdrawn 2 or 3 c.m. to give more flexibility to the tip. The catheter is now introduced on up to the kidney region. If there be stricture, the 3 or 4 mm. bulb will be somewhat obstructed as it passes the stricture area or areas.

At this stage a specimen of urine is collected for microscopic and bacteriological examination.

After the catheter has been passed the renal pelvis is distended with one to one thousand silver nitrate solution, this being used as a prophylactic measure in case infection of the kidney pelvis is present. The distension is not to the point of pain, but to where the patient feels an uncomfortable sense of fullness; the idea being to reproduce the mechanical condition that would have existed had there been an obstruction to the ureteral lumen in the past. The amount of solution injected and the amount returned through the catheter is measured. In cases of long standing, varying degrees of hydronephrosis are found, from 15 to 30 c.c. of the fluid being returned quite frequently; up to 90 c.c. not infrequently; and rarely up to 400 or 500 c.c. Quite often the reverse of hydronephrosis is found, the renal pelvis holding only 3 or 4 c.c. Hunner's explanation of this is that the passage of urine over a tender, probably raw ulcer spot at the site of the stricture causes a constant reflex nervous contraction of the kidney pelvis and the ureter above the stricture. In other words, the contracted kidney pelvis would seem to be a reflex, spastic mechanism. Dr. Howell, of the Hopkins Physiological Department, was consulted on this point and thinks this may be the explanation.

On withdrawing the catheter, one or more areas of stricture may be met with. The "hang" of the catheter as the bulb strikes a stricture may be ever so gentle, but the patient will complain and say, "There's the pain, Doctor."

The diagnosis of stricture of the ureter rests upon the interpretation of the amount and character of these pains. Quite frequently the positive diagnosis is based upon a recurrence of an attack of kidney colic where all the old pains are exaggerated during the twenty-four to forty-eight hours following an investigation. Rarely the patient may experience discomfort for as long as a week if the renal pelvis be infected. If the ureters are normal, the passage of the catheter and bulb brings on not more than a fair degree of discomfort, and for only a few hours. When a severe attack is brought on by the investigation, even 'though no positive signs of stricture were found by the catheter and bulb test, a repetition of the investigation is warranted, this time using a larger bulb.

The most difficult differential diagnosis is between a right ureteral stricture and a chronic appendicitis. This is proved by the fact that a large number of the most brilliant cures have been on women who have been operated upon previously for appendicitis by men of established reputation at Hopkins and other such medical centers. The patients who have had operations state that immediately or soon after the operation, they realized that they had not been benefited.

The principal factor in differentiating the two conditions when a ureteral stricture of not-long-standing is considered, is the location of the point of tenderness. Without fail the point of greatest sensitiveness with stricture is nearer the midline than McBurney's point and it can be traced upward from there nearly to the kidney region. Bringing on a desire to void by palpation is not infrequent if stricture be present; and pain is quite often referred down the thigh. The ureteral region can be palpated through the vagina and found very tender. The most satisfactory differentiation, and the one to be resorted to as certain, is the wax bulb catheter test. Of course a patient may have appendicitis and ureteral stricture at the same time. Occasionally a patient will be found who gives all the signs of ureteral stricture and says at the end of the investigation, "It was the same old pain here and here, but there is another pain that was not touched."

If there be doubt about ureteral or kidney stone, and sometimes it is impossible to differentiate without testing, the wax-tipped catheter with wax bulbs every 5 c.m. along its course will, in a large percentage of stone cases, demonstrate scratches that will enable one to make a positive diagnosis. Here the x-ray, of course, tells the story in a large proportion of cases. It is necessary to make both tests, though, because the x-ray experts admit that they overlook from 15 to 30 per cent. of kidney and ureteral stones, while on the other hand a wax tip may not reach a kidney stone. If ureteral stone be present it is quite likely that there will be associated one or more stric-

ture areas. Dr. Hunner has a good many thorium x-ray pictures that show this condition beautifully. Some of his cases, having passed ureteral stones in the past, have come to him saying that they are suffering with ureteral stones again, whereas, his investigations proved that they had only strictures. The writer saw one case operated upon where after one dilatation with a large wax bulb, a stone had passed one stricture area 14 c.m. from the bladder and had lodged against another 8 c.m. from the bladder. In this case the ureter was distended to the size of an index finger between the two stricture areas and above, on up to the kidney.

It is extremely important to be on the alert for picking up tuberculosis of the kidney. Every case that shows pus in the kidney urine should be examined microscopically. Mixed infections are so rare that the routine at the Brady Institute is to stain with methylene blue, and if no bacteria be demonstrated by this method, to stain for tubercle bacillus. Certainly a pyuria that shows no culture on agar agar from kidney pus and no bacteria on staining with methylene blue, should be tested again and again for tubercle bacillus. Tuberculosis of the kidney has most often associated with it an involvement of the ureter and a part of the bladder. The appearance of the lesion in the bladder is most typical as seen through the cystoscope. Most often the ureteral orifice and for some distance around presents a raw, red picture with occasional tubercles studded in the bladder wall. Palpation of the tubercular ureter often elicits the extreme tenderness that is found in ureteral stricture, but the tuberculous ureter, when palpated through the vagina, is found to be much larger than the wire-like structure found in the stricture area.

Ureteral stricture in its incipiency is naturally confused with disorders of the genital apparatus and because of vague pain in the ovarian region is diagnosed as dysmenorrhea. A great many of the patients say that at first they thought it was a necessary part of the menstrual period. Later, on consultation with the family physician, they were advised that it was merely engorgement from the menstrual period and that all that was necessary was to rest up for a few days prior to and after the time for the period. Since this is good paliative treatment for ureteral stricture, it is not strange that they were much benefited from this simple advice. To differentiate here is not so easy. However, a simple procedure may be followed that would undoubtely throw light upon many of the cases. First, at the time the patient is suffering most, distinguish whether or not the tender area can be detected in the pelvic brim, ureteral region, or in the kidney region. Then immediately after the menstrual period make a vaginal examination, being sure that you do not get the ovary or tube between the hands. Palpate the pelvic ureteral region as high as possible to determine if there is tenderness. If any of these areas of tenderness exist, a test by wax bulb should be made soon after the period, within a week.

Ureteral kinks, just below the kidney pelvis, which have received quite a bit of attention in the past, are frequently found in x-ray pictures. In many cases these are merely secondary to heavy kidneys resulting from hydronephrosis, in turn developing from ureteral strictures. This has been shown by the findings of Dr. Hunner and those who have used his technique. Whereas, these kinks are extremely common, a failure to relieve all symptoms merely by dilatation of the stricture areas si extremely rare.

A common diagnosis made for the symptoms coming from left ureteral stricture is "adhesions in region of the sigmoid."

Since returning to Birmingham six weeks ago, I have found sixteen cases of ureteral strictures, eight of which were referred and the others were picked up in the University Free Dispensary. Practically all of these women had been invalids or semi-invalids for years, and a majority of them presented post-operative abdominal scars.

CASE REPORT

Mrs. J., aged 34, mother of two children, came complaining of a variety of symptoms, the chief being pain and tenderness in the left kidney region. She had been a semi-invalid for eight years. Five years previously she had been operated upon for appendicitis and a retroverted uterus. She had had tonsillitis for years, and many tooth abscesses. She had a pain and tenderness in the right flank, but less severe than that on the left. Her pain was worse at some times than others, and when it was worst she had fever. The symptoms were always intensi-

fied when she was constipated. She did not have the radiating pain, but when the kidney pain was bad she had an almost constant desire to urinate.

On physical examination, there was nothing revealed except a general abdominal tenderness, worse over the kidneys and uterus. Pressure over the pelvic brim region of either ureter caused a desire to void. On making a vaginal examination she complained bitterly, but all the tenderness could be located in the ureteral regions.

The cystoscopy notes read as follows: A 10 % cocain solution is used in the urethra. The urethra is dilated up to a No. 9 Hagar dilator with difficulty.

The trigone is considerably injected, but the other part of the bladder wall appears normal.

The ureteral orifices seem retracted and look round and white. On account of the left-sided pain being worse than the right, the left ureter is catheterized, using a No. 8 renal catheter with a 4 mm. wax bulb and a wax tip. The tip obstructs after entering for 2 c. m., but goes in further, after the stilet is withdrawn from the catheter, for 2 or 3 c. m. The bulb, which is 2.5 c. m. in length, is seen to enter the ureteral orifice for its full length and there obstructs. Considerable force is required to push the bulb past this obstruction and the patient complains of her old pain. The stilet is withdrawn and urine flows freely. A specimen is taken for examination. (The urine later proved to have a colon bacillus infection.) The kidney pelvis on being distended with 1-1000 silver nitrate solution is found to hold 4 c. c. This distension exaggerates the old pain.

On withdrawal, the wax bulb hangs at 7 c. m. from the outside. A piece of mucous membrane comes back on the bulb. Neither the wax bulb nor the wax tip shows a scratch mark.

The patient had quite an attack of left-sided pain just after the cystoscopy and on two other occasions within the following forty-eight hours.

As the trouble in the left side subsided her attention was directed to the right-sided pains. One week after the left ureter was tested, the wax bulb catheter was passed on the right side and two stricture areas were found and dilated. One was 13 c. m. from the outside, or at the bifurcation of the right iliac artery, and the other was 7 c. m. from the outside or just beyond the bladder wall portion of the ureter.

She had a worse reaction after the second dilatation than after the first, requiring her to stay in bed for four days.

At the present time, three weeks after the first dilatation, she says that she is freer from pain than she has been for five years. She will receive two or three more dilatations on each side.

I could read you interesting histories of other ureteral stricture cases, but they are so similar in the main characteristics that it is unnecessary. These patients may be reasonably certain of cures after being dilated at regular intervals for three or four dilatations. Sometimes more than four are required. Most often the patient will be relieved of symptoms after one or two dilatations and fail to return for the subsequent ones until a recurrence of symptoms, when it is necessary to start over again with regular treatments.

AUTHORS' ABSTRACTS

Surgery

A Study on the Etiology of Cholecystitis and Its Production by the Injection of Streptococci. R. O. Brown, Rochester, Minn. Archives of Internal Medicine, Vol. 23, No. 2, February 15, 1919, p. 185.

Using the technique of Rosenow, the author made tissue cultures of seventy gall-bladders removed in the Mayo Clinic in an attempt to determine the etiology of cholecystitis.

In gall-bladders where marked pathologic changes were evident, 75 % contained streptocicci and 25 % were negative. Where but slight changes were in evidence, only 30 % contained streptococci and 58 % were negative. Fifteen per cent. of all gall-bladders cultured contained colon bacilli. Moreover, the number of organisms isolated was directly proportional to the degree of changes in the tissues.

Animal experiments showed that the freshly isolated organisms, when injected intravenously, have an elective affinity for the tissues from which they were obtained. They caused similar lesions and could be obtained from the gall-bladders of the injected animals.

The specificity of the organisms was further determined by agglutination tests and it was found that the serum of patients having cholecystitis agglutinated the strains obtained from gall-bladders only; the serum of patients having gastric ulcer agglutinated strains isolated from ulcers only; while normal human serum agglutinated neither.

Cultures were also made from pus obtained from the tonsils of cholecystitic patients. In every instance the streptococci thus obtained showed elective localization for the gall-bladders of the experimental animals.

Fermentation experiments showed the fermentative powers of the various strains varied somewhat. One strain of organisms after animal passage had its fermentative powers changed, but it was still agglutinated as was the original strain.

Streptococci, it appears, are the chief microorganisms associated with cholecystitis. The direct etiologic relationship of the streptococcus is established by their presence in numbers proportionate to the degree of gross and microscopic changes by having elective affinity for the gall-bladder of animals and by the specific agglutinating power of the serum of the patient from whom isolated. The elective affinity for the gall-bladder of animals of the strains from the tonsils indicates strongly that cholecystitis results from a blood-borne infection from a focal source.

The Two Most Important Signs in Chronic Appendicitis. Robert T. Morris, New York, N. Y. Medical Record, Vol. 95, No. 2, January, 1919, p. 55.

Physicians in general now make the diagnosis of acute infective appendicitis without much difficulty. The acute infectjve form of appendicitis is emphatic in its demonstration and attracts attention quickly. Consequently, we have come to think in terms relating to an infective process whenever an "itis" of the appendix is up for discussion.

Another infective lesion of the appendix relates to extrinsic invasion. Infection proceeding from a Fallopian tube, or from the peritoneum, or from some other organ or structure, may involve the appendix incidentally, the latter then going on with its own set of symptoms.

Extrinsic infection of the appendix does not occur so commonly as intrinsic infection, but neither one of the infective lesions occurs so frequently as does one of the irritative lesions. This irritative lesion does not send the patient to bed, but it sends him frequently to the doctor's office. It is a chronic lesion dependent upon involution change with fibroid replacement of the tissues of the appendix. Nerve filaments which remain in the hyperplastic connective tissue are irritated and they excite various abdominal ganglia.

Another chronic irritative lesion is scarring of the appendix resulting from infection. There is, furthermore, a chronic irritation of the appendix undergoing lymphoid changes.

The diagnosis of acute infective lesions of the appendix is easily made. For the most part the diagnosis of chronic irritative lesions is more difficult. Two signs are commonly so clear as to allow of prompt decision. One of these signs relates to irritation of the fused ganglion consisting of the second and third lumbar ganglia. Deep pressure upon the abdominal wall about an inch and a half to the right of the navel and a trifle below brings out this diagnostic point. Another sign belonging to chronic appendicitis and not to acute appendicitis is a chronic distension of the ascending colon with gas. The author calls this "the cider barrel sign." On percussing the left side of the abdomen normal resonance is obtained, reminding one of the cider barrel in October, but percussion of the right side of the abdomen gives a resonance suggestive of a cider barrel in March.

The X-Ray Treatment of Uterine Fibroids. Henry J. Kreutzmann, San Francisco, Calif. California State Journal of Medicine, Vol. 16, No. 11, November, 1918, p. 501.

Non-operative treatment of uterine fibroids is justified, because they are non-malignant neoplasms; no general affection as expressed by cachexia, no spreading to neighboring glands, and no metastasis to remote organs.

Symptoms, hemorrhage and pressure, are relieved, even if the tumors do not disappear. Shrinking occurs (sometimes complete disappearance) of tumors not due solely to cessation of menses ("roentgen castration"), but also to direct action of the rays on fibroids. Patients with uterine fibroids may be divided into three classes, as far as x-ray treatment is concerned

1. Roentgenization is demanded in cases with any surgical risk, such as pulmonary, cardiac, renal affections, anemia, etc.

2. Roentgenization is contraindicated in large tumors, rapidly growing tumors, tumors growing after the menopause, pregnant women, submucous fibroids, pedunculated subserous fibroids, adnexal tumors coexisting, whenever the slightest suspicion of malignancy exists.

3. Cases of choice between operation, x-rays and therapeutic nihilism are where symptoms are slight or absent. Here x-rays have the advantage in that something is done for the patient which is devoid of danger to life or health.

There should be a careful diagnosis and strict supervision during treatment.

Advantages of roenegenization are: mortality is nil, there are no possible after-effects such as ventral hernia, adhesions, thrombophlebitis; no interference with the daily life of the patient and no hospital stay.

X-ray treatment of uterine fibroids forms an excellent addition to our armamentarium. It is no panacea and must not be used indiscriminately, but if judiciously applied it will in proper cases save life and spare much suffering.

Types of Tubo-Ovarian Suppuration and Their Treatment. Robert M. Green, Boston, Mass. The Boston Medical and Surgical Journal, Vol. 180, No. 7, February 13, 1919, p. 179.

In an article describing "Types of Tubo-Ovarian Suppuration and Their Treatment," illustrated by cases and charts, the author presents the differentiation, description, illustration and the therapeutic surgical classification of a series of clinical types which have come under his observation. His opinions may be summarized by the following conclusions:

1. Tubo-ovarian suppurations may be classified into definite clinical types, of which five have been illustrated, according to the infecting organism and the route of natural escape pursued by the accumulating pus.

2. Treatment should be determined in accordance with the type of case, palliative depletion being always first employed.

3. When such palliation fails within a few days to effect relief of symptoms and subsidence of fever, deep suppuration should be suspected, even in the absence of fluctuation; and, with reasonable assurance of its presence, should be explored through the appropriate route.

4. The likelihood of rectal or inguinal pointing should not be overlooked, when the more customary vaginal pointing fails to occur.

5. Rectal or combined recto-vaginal examination is of value in determining by which route a given pus localization in the posterior pelvis may best be approached.

Etiology and Pathology of Fistula in Ano with Suggestive Treatment. W. E. Reynolds, Hopkinsville, Ky. Kentucky Medical Journal, Vol. 17, No. 1, January, 1919. p. 18.

A fistula in ano is a membranous tract commencing between the internal and external sphincters, never anywhere else, and having but one opening in the gut. It is caused by an inflamed hemorrhoid or some foreign material lodged between the sphincter muscle.

From the anatomy of the parts it would be a miracle beyond the comprehension of man for an ischio-rectal abscess to penetrate the anus. Consequently without this connection with the anus there would not be this muco-epithelial deposit furnished by the rectum to form a fistula. There is no such thing as an external incomplete or blind fistula, and the writer is as much opposed to the nomenclature of internal incomplete or blind fistula; a better name would be an ischio-rectal abscess with an internal opening, as it has no membrane, neither can it have, as the cavity is filled with pus and infectious matter and can not be properly drained. Hence the chronicity, and if this muco-epithelial material should get in this cavity. So soon as this cavity is emptied either by its own progress or by the scalpel, there follows a muco-epithelial deposit along this cavity forming a fistulous membrane, which illustrates the difference between a simple abscess opening and a fistula and its chronicity.

There are many operations and treatments for fistula, with as many failures and objections, but to make a perfect success would be to cut down on the fistulous track near the anus, sever the fistula and turn the stump into the anus and ligate. This cuts off further supply of mucus from the rectum. Take up the other end of the fistula and expose externally, close the wound and plug all other external openings or branches of the fistula with small pieces of cotton and inject at site of operation with some escharotic to destroy membrane.

The Wassermann Reaction in Pregnancy. E. L. Cornell and A. W. Stillians, Chicago, Ill. Journal of the American Medical Association, February 22, 1919.

The authors questioned Falls and Moore's report relative to the positive Wassermann test in private pregnancy cases. Eleven and three-tenths per cent. positive reactions, if correct, showed that many syphilitics in private practice were escaping detection. Cornell ran a series in private practice and found 3.6 per cent. positive reactions in 107 cases. Two of the four gave a history pointing to syphilis. The other two gave no such suggestive history. In Stillians' series of 101 charity patients entering the Chicago Lying-In Hospital, the Wassermann reaction gave a little less than 10 per cent., practically agreeing with Falls and Moore's results. Two had active skin lesions, two gave a history pointing to syphilis, while the others gave little history suggestive of syphilis.

Reviewing Cornell's cases, one notes a number of cases giving a history of abortions and stillbirths, and in all probability these were not syphilitic. Twenty and three-tenths per cent. gave such history, and it seems unreasonable to ascribe any large proportion of them to syphilis which is extinct or is beyond reach by clinical or serological recognition. The cause of many of these stillbirths has been placed as due to focal infection.

1. The first series of private cases gave only 3.6 % positive Wassermann reactions.

2. The second series of charity cases gave nearly 10 % positive reactions.

3. More than one-third of these positive cases were detectable only by the serum examination.

4. Routine Wassermann reactions in pregnancy are amply justified by these findings.

5. A surprisingly large number of apparently non-syphilitic women give a history of frequent abortions.

6. The Wassermann reaction should be checked by searching for the spirochete and by post-mortem examinations when possible.

Recognition and Management of Labor Injuries. Arthur J. Skeel, Cleveland, Ohio. American Journal of Obstetrics, Vol. 79, No. 493, p. 1.

The most serious results of labor are due (1) to infection; and (2) to mechanical injuries. Mechanical injuries can be safely recognized and repaired only when infection of the vaginal tract during labor is carefully avoided. This means hospital technique; the use of rectal examination instead of vaginal, etc.; and an aseptic conscience. Inspection and repair of the upper vagina and cervix may be safely and successfully practiced in the majority of hospital cases. The technique is best carried out by the aid of cervix holders instead of volsella, broad short retractors to permit drawing down the cervix, and a drop or head light.

Post-partum inspection and repair of cervix should be omitted if the asepsis has been poor; in mulipara with known old lacerations; in cases where there is reason to suspect existing infection.

The author has carried out the technique as follows: Inspections, 180. Fifty-one cases needed repairs. In 9 cases because of bleeding, infection, etc., repair was not done. Forty-three cervical repairs gave good results in 84 % of the cases. In repairing muscular injuries about the perineum, buried catgut sutures accurately approximating the injured tissue give the best results.

EYE, EAR, NOSE AND THROAT

OPHTHALMIC PRACTICE OF TODAY AND ITS BEARING ON UNDERGRADUATE OPHTHALMIC TEACHING*

By Hiram Woods, M.D.,
Professor of Diseases of Eye and Ear,
University of Maryland and College
of Physicians and Surgeons,
Baltimore, Md.

It seems trite to say that ophthalmology should be taught as modern medicine regulates, or should regulate, its practice. But when one analyzes ophthalmology to formulate rules for its teaching, based on modern practice, triteness gives place to a problem of no mean dimensions.

The study of eye anatomy involves nonvascular tissue, its complicated nutrition and drainage. The blood vessels themselves are divided into three distinct groups, practically independent, yet by anastomoses sometimes producing problems in diagnosis.

Eye muscles have peculiar insertions and inervations. All these make up a special anatomy which must be mastered. Ocular physiology introduces optics, vastly important from both the physical and physiological sides. The muscles must work in harmony with visual adjustment. When ametropia is introduced, harmony is disarranged. Sometimes Nature regulates this perverted physiology; sometimes she fails and we must help. It is not always simple.

Again, there are functional eye defects produced by extra-ocular influences. Irritation of accommodation may result from causes which, in another patient, would produce visible eye lesions. Diabetics frequently suffer from such changes in their refraction. So do the innocent victims of hereditary syphilis. Asthenopia, accompanied by circumcorneal injection, without visible cause, especially in school children, is sometimes the forerunner of uveal disturbance. Refraction error may be absent or variable and glasses do not help. It is often hard to get reliable cycloplegia. Systemic study is as important as if a corneal infiltration were present. There is a medical side of refraction by no means negligible.

Again, consider for a moment the causation of eye diseases. Besides local infection, three causes have long been accepted: syphilis, tuberculosis and rheumatism. Idiopathy has answered the purpose when no one of these has been proven. Beyond gummatous iritis and (with a question mark) interstitial keratitis, there is practically no eye lesion solely characteristic of luetic infection. No oculist today should accept a luetic origin in even these diseases or macular choroiditis without other clinical proof or positive Wassermann.

Ocular tuberculosis presents some striking features. It is rarely associated with pulmonary tuberculosis. Keratitis is not infrequent with glandular infection, while the most serious of tuberculous infections, choroiditis, is often a local process, unassociated with general infection. Diagnosis depends upon tuberculin reaction in the eye: so-called focal reaction. This may be a serious matter. Vaccine diagnosis and treatment can be too glibly handled and one should associate with him in such cases a confrere who understands it.

Finally, "rheumatism" is now hardly a pathological entity. The form in which it occurs with, or as a cause of, eye trouble is not acute rheumatic arthritis; for it is rare with this affliction; but, in what we still term chronic rheumatism, eye complications are abundant enough. So we must ask what this disease is. So far as I can make out, in modern medical practice, it is considered a result of an infection focus somewhere in the organism. That focus must be hunted down. This is very different from accepting a rheumatic diagnosis because there are muscle pains and we can not explain them. It is equally illogical to rely upon salines, alkalies, salicylates or potassium iodid as remedies when we do not know the underlying cause. However, sometimes we are driven

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back there because either our search is fruitless or, for one reason or another, the focus can not be removed. As to "idiopathy," the tonsils, sinuses, teeth, intestines, gall-bladder, have greatly reduced the number of such cases.

Thus far I have tried to outline briefly some of the essential requirements of ophthalmic practice from two points of view: refraction, which makes up probably three-fourths of our work, and causation of the commoner eye diseases. The oculist's work has alone been considered. Refraction, with its side problems, is his business; so is the etiology of eye lesions. For years we have hammered away at the general practitioner with arguments and urgings to look out for the dangers of ophthalmia neonatorum and to make more use of the eye in general diagnosis. Quite a number have responded and are themselves fair ophthalmoscopists. But they soon find they are in the most difficult part of ophthalmoscopy and they have the right to call upon us for help; help not only in seeing changes which might escape them, but in interpreting them. Rigid and unequal pupils, tortuous vessels, increase or diminution in caliber of veins or arteries, retinal edema, exudates, hemorrhages, blurring of neuro-retinal margin, neuritis, old or recent lesion: these are some of the things about which the physician wants to know. Modern ophthalmology puts it up to the oculist to inform him. Mere statements of lesions do not fulfill his needs. Here comes in a most important procedure—perimetry. Thread-like vessels, for instance, may not be abnormal. They are one thing when the field is normal; another when there is concentric contraction for form and colors, especially if contraction advances. Enlargement of the normal scotoma, or scotomata anywhere in the field, are important.

Ocular surgery demands knowledge of, first: the technique of special operations; second, general surgical principles and antisepsis; third, modifications of these demanded by the environment and characteristics of eye tissue. Because of the situation and sensitiveness of the eye, it is impossible to get an aseptic field or to use all the requirements of clean surgery. Recently in my clinic, after a cataract operation, I spoke of the use of iodin tincture in dendritic keratitis. A student asked me why I had not painted the cornea with iodin in the cataract operation. He had seen the skin so sterilized in abdominal surgery and the question was natural. He needed light on special aseptic modifications. It is not my purpose to discuss fully these or other essentials. I am stating only what is commonly known and am doing it for the purpose of definition.

If the practice of ophthalmology requires what I have outlined, how should it be taught? I have been led to write this paper by my experience of three years on the American Board of Ophthalmic Examiners. It has been my fortune to be associated with colleagues who not only realize for themselves the extent of ophthalmology, but who want to see education standardized. In the July number of the *American Journal of Ophthalmology,* Dr. Edward Jackson, Chairman of the Board, published a most illuminating paper under the title "Defects in Education for Ophthalmic Practice." He concludes, as any one must who knows the state of undergraduate medical teaching, that this work must be largely post-graduate; but the subject of undergraduate teaching is of no less importance.

Let me give one or two examples of the practical results of its defects. In one of my examinations we had a patient with a beautiful simple extraction in one eye and in the other a mature cataract. I asked the candidate to go through the examination of the cataractous eye and tell me whether it would be worth while to operate. He answered (very sensibly as far as he went) that with normal vision in one eye, operation upon the other might not be of much use, but that if dilatation of the pupil showed the cataract was ripe it could be removed. I then asked him to throw out of consideration the operated eye and to determine whether or not there was essential probability of extraction's improving vision in the other. His reply was that he could not tell until he removed the ripe cataract. "What good would it do," I asked, "to remove the cataract if the retina or nerve were out of commission?" His reply was, "None, but I can not tell their condition through an opaque lens. I can not see them." That

man had been in practice nearly ten years. Had I asked him about light perception, light projection, pupillary reaction, *per se*, he doubtless would have answered correctly; but when it came to applying these physiological facts to eye surgery, he apparently had never thought of it. In another examination a man who had a good many years of practice told me that he had never had time to take fields because he was too busy with refraction work and ordinary diseases. I asked him how he would make a diagnosis of toxic amblyopia. His naive reply was, "By the history and failure to improve vision with glasses."

Young men are not to be blamed for this. Those of us who hope we have trained ourselves to a higher level of thought, thrashed through the same things until self-dissatisfaction drove us to something better. They and we were taught in our under-graduate life along certain lines. This was followed by the selection of ophthalmology as a specialty. Selection was based upon conceptions which resulted from former teaching. If the latter was faulty, we reasoned on a wrong basis. Early impressions last, and it needs a good deal of determination or hard knocks to throw them off. Maybe, after graduation, dispensary or hospital service was obtained or a brief post-graduate course taken in some clinic, where, as Jackson says, there were ample opportunities for observation of which we could not take full advantage because of our former defective training.

On account of the magnitude of ophthalmology and the impossibility of teaching it adequately in undergraduate life, we have reduced our undergraduate teaching to what we term essentials. In this we have been guilty of two blunders — first, over-specialism; and second, over-simplicity. The former has tended to divorce ophthalmology, at least in the thoughts of the students, from general medicine. The second has failed to train them in the application of pathological principles to ocular defects. As an example of over-specialism, I want to give an observation of a good many years ago. I visited the clinic of one of our then leading ophthalmic teachers. The chief brought in a patient, a tall, spare man in his thirties, who had the stare and gait of the victim of recent nerve atrophy. He had a little vision left. The Professor called attention to the stare, to the dilated pupils and ventured the prophecy that on examination he would find nerve atrophy. So, indeed, he did and reported the fact to the students, none of whom were invited to use the ophthalmoscope. The Chief of the Clinic then whispered something to the Professor and, failing to get a satisfactory reply, repeated what he had said. Then came the reply out loud: "I don't care if there is a history of syphilis in any stage; the man has nerve atrophy. Bring in the next patient."

The Clinic over, the Chief asked me to stay and go with him to the Dispensary. There was our patient and the Doctor pointed out ataxic gait, lost patella reflex, etc. Even at that time—in the 1880's—the relation between early nerve atrophy and tabes was well known. All that side of an instructive case, however, was wasted so far as the students were concerned; no cause was given for the atrophy, no outline of investigation suggested by ocular conditions, and the one lesson the youngsters got was the wonderful professional acumen which enabled the lecturer to prophesy nerve atrophy. Only the eye lesion was discussed. If this justly distinguished teacher can be properly criticised for an over-specialized viewpoint thirty odd years ago—as, I think, he can—how much greater the sin of teachers of today who fall into the same erroneous method! Not all cases of nerve atrophy show so clear an explanation as did this. Often from the clinical point of view there is no cause. But what is the duty of the oculist? Blindness is bad enough, but there are conditions which may be added to blindness that can make suffering infinitely worse. The laboratory man, internist and neurologist should take up the study of possibly impending paresis or multiple sclerosis. The oculist should see this started, at least. Treatment, already too long delayed, might avert worse consequences.

Undergraduates should see a close relation between ophthalmology and all departments of medicine. The very presence of optics, with its essential physical, apart from physiological, problems, has

contributed to loose thinking. The optometrist has not been slow to take advantage of this and to spread a propaganda which has, so to speak, taken in a good many practitioners. Having graduated with vague, indefinite ideas of ophthalmology, a physician thinks of the eyes as a cause of headache, for instance. Relying on his own judgment, he wants "the eyes excluded first." He sends the patient to an optometrist, where some seeming refraction error may be corrected, or, at least, made an excuse for selling a pair of lenses. The patient is satisfied that he has done all demanded along that line, the busy doctor forgets or waits for results from glasses before a clinical study. There often result wasted time and unnecessary suffering if nothing worse. Whose fault is it that the doctor going into general practice from the student bench has this false idea of a part of medicine which touches every other part? Whose but the man who taught him? Had proper insistence been laid upon ametropia as one of many possible causes of headache, and emphasis, on differential diagnosis, two results would have followed: the man who afterward became an internist would have become a better diagnostician, and the one who selected a specialty a better doctor. The former would have realized the essential medical nature of the case. Overspecialism did the mischief to both men. Both started with the wrong viewpoint.

I mentioned over-simplicity as another error in undergraduate teaching. Essentially, as Jackson, my lamented friend Wendall Reber and others have insisted, ophthalmology, to be learned thoroughly, must be post-graduate standardized work; but that does not relieve the undergraduate teachers of responsibility for giving the future specialist proper data on which to base his life work decision, and the future physician a right conception of the relation of the eye to general medicine. With the mixed class and fear of teaching over the heads of most of them, there has come a simplicity of teaching that has made our work little more than presentation of isolated facts. If not linked with pathological principles, these facts form a wrong basis of thought—unless thinking is put aside entirely—for the man contemplating ophthalmology. They make him look on the specialty as something requiring little medicine. The student who goes into general medicine forgets them altogether. Neither man will be thus deceived if the ophthalmic teacher realizes that at his clinic and didactic lecture, and in prescribing reading, he has an opportunity of pushing home lessons in general medicine. This might be illustrated from numerous points. Let me take but one—corneal ulceration. Mention has been made of our efforts to save the sacrifice of babies' eyes. Integrity of the corneal epithelium is essential if the eyes are to withstand the inroads of infection. Two lessons at once follow: first, the necessity of gentle manipulation in cleaning, together with the danger of an untrained hand introducing a cotton-armed applicator beneath the lids; and secondly, the routine use of cocaine to relieve pain following the nitrate of silver drop. If told "why" not only is the fact impressed, but lessons in the function of epithelial tissue are sent home. Or, take the course of an ordinary corneal ulcer from infection to healing. If we make the student understand that injury to sight depends upon density and situation of the nebula or leucoma, we have accomplished something. If we stop there we have done nothing of permanent value. Circum-corneal injection follows the infection. Why? Here are opened pathways for teaching the general behavior of vascular tissue adjoining and nourishing non-vascular structures when something goes wrong with the latter. Atropia usually benefits corneal ulceration, prevents complications and relieves pain. Why? Hyperemia, through anastomosis, congestion and exudates come to our minds and should be transferred to the student's. Tell him atropia is used to prevent secondary iritis and he will forget it. Show him why, and he will remember and learn something else besides. A number of years ago I accidentally used the expression "putting a therapeutic ligature on the iridic vessels." If one man has told me that this started him on valuable thinking, a score have.

Cocaine as a routine analgesic is positively harmful in corneal ulceration. Stop there, and we accomplish nothing. Go farther; show the function of corneal epithelium in the healing of an ulcer, make

clear that the appearance of vessels, shooting their noses from the conjunctiva over the cornea is a harbinger of better things, explain the necessity for these steps toward health and then compare the action of cocaine on both epithelium and vessels with what we want, and you have accomplished several things. You have taught ophthalmology and have also linked it with general pathology. You have inseparably connected eye troubles with the basis of all good medical thinking. You can go farther, if you choose; you can compare the action of holocain on the vessels and its sparing of the corneal epithelium with cocaine. You can show why heat usually helps healing; also, why it may be harmful if the ulcer is associated with purulent ophthalmia; why cold, used for the latter, may do harm to the ulcer. I give this merely as an example of what I mean by linking up general medicine with undergraduate teaching of ophthalmology.

One can think of many other examples. Hypopyon, if presented as a complication of dangerous ulcers, will make no lasting impression; but if explained as an example of the formation of germ-free pus cells in the neighborhood of infection, and that for that very reason it seldom calls for surgical interference, the whole line of thought is changed. It teaches pathology. One could illustrate this by examples taken from lid, uveal, retinal or nerve diseases; but it seems unnecessary to do so.

What I want to make clear is this: the experience of the Examining Board has shown a general lack of appreciation of this method of teaching. There have been conspicuous exceptions. Some teachers are awake to facts; but many, judging from what we have seen, are following the old course of over-specializing on the one hand and reducing ophthalmic teaching to little more than presentation of facts on the other. It is unfair to students and to the public they will have to serve.

The Board's work of standardizing ophthalmic teaching was necessarily interrupted by the War. When reundertaken it will, of necessity, chiefly concern postgraduate work. It will endeavor to influence undergraduate instruction to the extent of urging teachers to give men a proper basis of thought. Without it, the first task of men entering ophthalmology will be to unlearn a great deal they think they know. So to present ophthalmology to the undergraduate as to impress the man destined for general practice with the truth that this specialty touches general medicine everywhere and that he must include it in his thinking, and to show the future ophthalmologist that in selecting ophthalmology he is not leaving general medicine behind but is merely selecting one branch of practice to which he must apply the principles of general medicine—this is the real problem. How can it be better solved than by founding special teaching on general pathology? If it means more work for the teacher, he must accept it. He should have smear preparations made in his clinic. If he reviews iritis from its clinical side at one clinic, he should give the laboratory findings at the next — Wassermann and tuberculin tests. If an eye muscle is paralyzed the neurologist should take the case for further study and report. But it is useless to pile up illustrations.

Our young men will soon be coming home from across the sea. They have had an environment in which exclusiveness, frills and academic ideas have had to take a back seat. They have had to put up with lack of advantages, right at hand at home, and have accomplished almost wonders. They will bring with them not only new methods and new thoughts, but. if I do not wrongly interpret what some of them have written me, will teach us that a lot of things we hold as almost sacred are unessential, superficial or cumbersome. Their thinking has had to be done on their feet, and it has gone back, with the best of them, to simple pathology. I mean thinking on pathological principles. One of them wrote me recently that he was profoundly grateful every day for the "fine-print in Fuchs." And this fine print is mostly an expression of physiology and pathology in ophthalmic terms.

842 *Park Ave.*

EUSTACHIAN IRRIGATION IN CERTAIN MASTOID OPERATIONS*

By J. W. Jervey, M.D.,
Greenville, S. C.

"Safety first" is the watchword of all surgery that is good surgery. In the attainment of this eminent desideratum, the first essential, recognized in all the ages of surgical achievement, is the control of hemorrhage. Second only to this is the control of sepsis. The former, even in the face of the mishap which has, with ample reason, struck terror to the heart of many a stout surgeon—the accidental penetration of the lateral sinus—is well understood in mastoid surgery; but the latter,—the control of sepsis—it seems to me, perhaps because of the less immediate menace, has not been so carefully, thoroughly, and scientifically prosecuted.

If, for example, it is true (and one can not doubt that it is) that the Eustachian tube is a lurking place for pyogenic organisms, and an avenue for infection and reinfection of the middle ear and mastoid cells, then necessarily it should be given more careful and prayerful attention in the performance of the simple mastoid operation, and of many of the hybrid variety of procedures, designated by an equally variegated number and type of operators as "modified radical" operations. I am disposed to think, therefore, that cleansing of the tube (and incidentally the middle ear) in the simple operation, must be a procedure of merit. Certainly the three cases in which, up to the time of this writing, I have had the opportunity of using the method, have yielded an encouraging stimulus to a continuation of the practice.

In these days of the making of many books, of which there is no end, and the doing of many operations by countless surgeons, it is a bold and fearless man, indeed, who will claim originality of suggestion or execution of any imaginable procedure. I may only say, then, with all due diffidence, that I have never seen nor heard of the method's being used by others in this connection. The technique I have adopted is briefly as follows:

After the operation itself is fully completed, and before the insertion of drainage and suturing, the patient's head is turned face up and a mouth-gag inserted. An ordinary Eustachian catheter is placed through the nose into the pharyngeal orifice of the tube, perferably under direct inspection with a Holmes pharyngoscope—an instrument, by the way, which is an invaluable addition to the otologist's armamentarium. (Perhaps a Yankauer speculum and straight canula, through the mouth, could be well used.) An assistant holds a sponge by means of forceps well up in the oropharynx to prevent leakage of the irrigating fluid into the lower pharynx. Then with the aid of a rubber bulb syringe and tubing with a tip to fit the catheter, a warm 1-5000 bichlorid solution (one to two syringefuls being used) is injected through the Eustachian passageway, middle ear, antrum, and on out through the exposed mastoid field. It is necessary that the catheter should have the proper curve, and it should be introduced well up into the orifice. The catheter should be of small caliber and the distal inch should be uncurved, with the aperture pointing at an angle of about forty-five degrees from the long axis. By this means the tip can easily be inserted to the isthmus. It may be necessary at times to remove the blood clot from the antrum and middle ear by direct suction or irrigation before a flow can be established for tubal irrigation.

It might be said, and properly enough, that this procedure does not close the tube as an avenue of re-infection. We may reply, however, that the irrigation cleanses the tube and middle ear to an appreciable extent and the re-formation of the blood clot in the antrum and middle ear establishes a mild inflammatory reaction which closes the tube for the time being and until recovery has ensued; and this is a clean clot in a clean field, closing a clean tube. This must necessarily contribute to the attainment of a clean and quick result.

When I see many of my friends—beautiful and accomplished operators, too—taking from three to six or more weeks to get a complete recovery from a simple mastoid operation, I marvel. The fact is due, I believe, to two prime causes, viz.:

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too much interference in the antrum, and too little interference with sepsis. I think that simple mastoids should be healed and well, fully recovered, within — and well within — two weeks. Many of them should require but two or three dressings before dispensing with drainage for simple external protection, and it is my hope and belief that Eustachian irrigation will still further reduce the time of recovery.

Tubal irrigation is indicated, I think, in every simple mastoid operation where the tympanum and tympanic membrane are intact. Naturally, for anatomical reasons, the procedure is more difficult of accomplishment in children than in adults. However, it is of less urgency in children, as the consideration of time of recovery is usually of less importance economically.

REPORT OF CASES

Case I.—C. S. C., male, aged 20 years, was a college student. X-ray diagnosis was made of an old focal infection in the right mastoid. At operation the knee of the lateral sinus was found within about ⅛ inch of the posterior wall of the external canal, and the sinus was accidentally opened early in the operation. Mastoid cells were cleaned out; antrum not definitely involved and was left undisturbed. Eustachian irrigation. On account of the opened lateral sinus only one suture, at the top of the wound, was placed. On the fourth day the wound was dressed and the sinus packing removed. No pus was present. Dressed again on the sixth day. No pus. On the eighth day dispensed with drain and inserted one suture to help close the wound. The next dressing was on the tenth day. The wound closed nicely. On the fourteenth day the wound was entirely closed and the patient was discharged and sent home to another city. Note that this was an open wound case—well in fourteen days.

Case II.—J. T. S., male, aged 48 years, was a commercial salesman. Chronic mastoiditis, right side, of fifteen years' standing, with almost constant pain and occasional discharge from the ear. Tympanic membrane intact. Excessive tenderness of the posterior canal wall. At operation a large amount of carious bone and granulations with some pus were removed, including half to two-thirds of the posterior wall. (Pathologist reported pus cells numerous, but could not differentiate the micro-organism.) Eustachian irrigation. Dressed on third day. No pus. Healing by first intention. Dressed again on fifth day, leaving out drain. Eighth day completely healed and patient sent home. A piece of plain gauze was kept over the wound area one more day merely as a protection from cold winds.

Case III.—M. B., female, aged 19 years, was a college student. Acute exacerbation of a chronic mastoiditis, right side. Posterior canal wall markedly bulging and extremely sensitive. Tympanic membrane was intact. At operation the mastoid was found to be very large and filled with carious bone, necrotic tissue, granulations and pus, down to the tip, which was removed. Also resected one-half or more of the posterior wall. (Pathologist reported streptococcus.) Eustachian irrigation. Dressed the wound on the fourth day. No pus. Dressed it on the sixth day. Slight bloody serous discharge. Dressed on the seventh day and found moderate sero-purulent discharge. Better on the eighth day. No discharge on the ninth day. Left out the drain. Wound was closed on the eleventh day and the patient was well to all intents and purposes. One week later symptoms of pus appeared, the wound was opened under local anesthesia (ethyl chlorid) for one-half inch at the lower end. A small amount of pus was evacuated (perhaps eight or ten drops), and a drain inserted. Pus formation ceased in three or four days and at the end of a week closure of the wound was permitted. At this writing only a few days have elasped, but the patient is apparently entirely well. As stated above, this was a streptococcus case.

AUTHORS' ABSTRACTS

Eye, Ear, Nose and Throat

Some Observations on Astigmatism. John Green, Jr., and William F. Hardy, M.D., St. Louis, Mo. American Journal of Ophthalmology, Vol. 2, No. 1, January, 1919, p. 43.

In order to eliminate uncertainty as to what is meant by astigmatism with the rule, against the rule, and oblique, Green and Hardy propose the following definitions:

"Astigmatism with the rule, or direct astigmatism, shall include all cases with meridian of greatest curvature at any point on the arc from 46 to 134°.

"Astigmatism against the rule, or inverse astigmatism, shall include all cases with meridian of greatest curvature at any point on the arc from 0 to 44° and from 136 to 180°.

"Oblique astigmatism shall include all cases of astigmatism with meridian of greatest curvature exactly at 135 and 45°."

It is stated that inverse astigmatism is productive of unusually annoying symptoms. Reference is made to a recent study by the same authors, in which, in 1024 eyes with regular astigmatism, 283, or 27.7 %, were inverse. This is a larger percentage than is generally surmised.

A photograph illustrates one reason for the greater degree of asthenopia in eyes with indirect astigmatism, e. g., the greater interference with the legibility of type.

Cycloplegic measurement is advocated in presbyopes who give conflicting answers when tested without "drops."

One case reported illustrates that high unilateral regular astigmatism may be due to a birth injury.

An appropriate cylinder will often greatly improve vision and enhance the comfort of a patient whose cornea is deformed by antecedent injury or disease.

An eye with irregular astigmatism due to incipient cataract does not often tolerate a cylinder, as the lenticular astigmatism is constantly changing with the progress of the opacification.

Eye Strain as a Factor in Gastric Neuroses. Alonzo C. McFarling, Shawnee, Okla. The Journal of the Oklahoma State Medical Association, Vol. XII, No. 1, January, 1919, p. 13.

The far-reaching effect of eye strain in the production of gastric neuroses may the more easily be appreciated by a painstaking review of the physiological characteristics of the brain, the great "clearing house" of the nervous system.

From the various cells or cell units emanate the nervous impulses which activate and control the respective functions of the organs which they supply. The functional needs of such organs registering themselves as peripheral sensations upon their respective nerve centers call forth central impulses of sufficient force or intensity to meet the requirement.

In view of the fundamental physiological characteristics of nervous tissue and the anatomical arrangement of the fibers by which Nature has provided for those important processes designated as association, concentration, inhibition, etc., we may reasonably conclude that any cell or cell unit, when acting under a degree of excitement greatly exceeding the normal, would, through the processes of association and inhibition, modify the normal activity of those cells or cell units with which they were in physiological and anatomical relationship.

Reasoning from this, we may conclude that such a relationship exists between the nucleus of the vagus supplying the stomach and the nuclei of the third, fourth and sixth cranial nerves supplying the musculature of the eyes, all of which are situated beneath the aqueduct of Sylvius in the floor of the fourth ventricle.

Remote Symptoms (Especially Nervous) Due to Tonsillar Toxemia. W. D. Jones and H. B. Decherd, Dallas, Tex. Texas State Journal of Medicine, Vol. 14, No. 9, January, 919, p. 303.

Foci of infection, whether they be from tonsils or not, are in many cases responsible for nervous symptoms such as chorea, neuritis, etc.

The case reported in this article was one of toxic insanity and the patient rapidly recovered after removal of the tonsils. Wassermann was negative from cerebrospinal fluid at two different examinations and the culture was negative from the cerebrospinal fluid. Examination of the tonsils unfortunately was not complete as the report shows cocci and rare bucillus present, which is meaningless from a scientific standpoint.

The patient at times would be in a profound stupor, which would be followed by delirium and occasionally hallucinations. The thick white flake patches on the tongue and similar patches on the tonsils, which were very red and friable, presented a picture not often seen.

This patient received no treatment except removal of tonsils and after care.

Congenital Tumor of the Cornea of Doubtful Classification. H. H. Stark, El Paso, Texas. American Journal of Ophthalmology, Vol. 2, No. 1, January, 1919, p. 5.

This report concerns a tumor on the cornea of a fifteen-year-old Mexican girl about 8 mm. across the base, bluntly conical in shape, and about 5 mm. high, protruding between the lids. There was a clear ring of corneal tissue surrounding it, showing that the origin had not been at the limbus. Older persons of the family confirmed the statement that the growth had been present since birth, and also that it had increased in size in the last few years.

The tumor was removed under a general anesthetic, leaving a clear cornea except where there were slight opacities from the operation.

On sectioning, it was found to be made up of fibrous connective tissue, which had undergone hyalin degeneration, with some fat in the base of the tumor.

Sections were submitted to four pathologists, two of whom reported it to be fibroid; one, dermoid; and one agreed that dermoid would be the most likely classification. However, to be positive, he would like to find some dermal tissue or hair.

The author takes up the literature on the subject of corneal tumors and speaks of the doubtful classification of some of the cases reported, contending that no tumor should be classified as corneal which has at any point a connection with the limbus. He considers the possibility of two origins of the dermoid: the lid and the amnion, contending that from either source it should be classified as a dermoid, basing the classification on the origin rather than the histological structure.

Bitemporal Hemianopsia Due to Acute Suppuration of the Posterior Nasal Sinuses. F. A. Conlon, M.D., Lawrence, Mass. American Journal of Ophthalmology, Vol. 2, No. 2, February, 1919, p. 92.

Bitemporal hemianopsia due to sinuitis is an extremely rare occurrence, there being but four such cases in all ophthalmic literature.

In the case reported the vision, a week after the onset of eye symptoms, was reduced to the ability to count fingers at two feet.

Following the exenteration of both posterior ethmoids and sphenoids, there was an immediate improvement in vision which in two weeks increased to 20/100 in each eye.

The teaching that the commisure or chiasm rests upon the optic groove of the sphenoid bone, is wrong. In the first place, the optic groove is not large enough to hold the chiasm which measures anteriorly 7 to 8 mm., while the average measurement of the groove is but 6 mm. anteroposteriorly.

The average position of the chiasm is 16 mm. posterior to the optic groove. Onodi and Loeb have both published cases, however, where the sphenoid sinus is in close contact with the chiasm as it must exist in this case reported.

The author shows that this close relationship of the sphenoid sinus to the optic chiasm is the rare exception rather than the usual arrangement, so that we can explain the possibility of its occurrence and at the same time understand the comparative immunity of the chiasm to retrobulbar neuritis so commonly associated with postnasal suppuration.

Monocular Retrobulbar Optic Neuritis from Hyperplasia of the Ethmoid Bone. Report of Three Cases with Operation. Derrick T. Vail, M.D., F.A.C.S., Cincinnati, Ohio. American Journal of Ophthalmology, Vol. 2, No. 2, February, 1919, p. 96.

Ophthalmologists occasionally encounter cases of blindness or partial blindness of one eye in patients who maintained they had normal vision a short time before and upon searching the fundus nothing abnormal is seen. The optic disc and retina appear normal and yet on testing the sight the patients' statements are verified. Such a patient, if he sees at all with the eye, will be blind in the center of his field, but will see some around the edge. The degree of blindness varies in cases depending upon the stage at which it is seen.

Examination of the nose does not reveal anything abnormal nor does the history throw any light upon the ethmoids as being a cause of blindness.

In 1901, Vail published a paper in Alt's *American Journal of Ophthalmology* on the subject "Optic Neuritis from Intranasal Disease," and in that offered the opinion that these cases of mysterious blindness of one eye might be benefited by intranasal surgery. Since then he has seen many cases which seem to bear out the opinion that swelling or hyperplasia of the ethmoid bone especially affecting the posterior ethmoid cell presses the optic nerve in its foramen and causes strangulation which causes acute blindness and results in descending atrophy of the visual fibers. In the present paper he reports three cases which, after exenteration of the ethmoid, the patients recovered their vision. In one case there was complete restoration of sight after total blindness.

X-ray of the ethmoid established the diagnosis.

Frequent But Neglected Evidences of Syphilis from the Side of the Nose, Accessory Sinuses, and Ear. H. B. Graham, M.D., San Francisco, Calif. The American Journal of Syphilis, Vol. 3, No. 1, January, 1919, p. 26.

The author points out that in congenital as well as in acquired syphilis there are a number of pronounced signs from the side of the ear, nose and throat which have been sadly neglected in the past by syphilologists. In the nose there appears frequently a passive congestion of the mucous membranes which gives a bluish tinge and a thickened appearance, which thickening does not become less when painted with cocain and adrenalin. This thickening is apparently present in the accessory sinuses and leads to an interesting x-ray picture. The shadow of the sinuses on the x-ray plate is not uniform. If the picture is taken with the patient in the upright position, it will be found that the density may appear at the top of the sinus and not at the bottom as is the case when serum or pus is present. The dense shadows may not be confined to the sinuses, but may lap over into the surrounding bone. These patients catch colds quickly and are sometimes treated for years without beneficial results.

He finds syphilis of the middle ear to be not infrequent though seldom diagnosed. The picture is that of a non-painful swelling of the mucous membranes with small secretions and severe deafness with ringing and possibly dizziness. There is a rapid destruction of the drum, but a sluggish course thereafter. On the side of the internal ear is observed tinnitus, impairment of hearing, shortened bone conduction, vertigo and impairment of the turning and caloric reactions. In all of these the main characteristic is the disharmony between them.

Diseases of the Uveal Tract. Samuel D. Risley, M.D., Philadelphia, Pa. American Journal of Ophthalmology, Vol. 2, No. 2, February, 1919, p. 115.

The embryology and histology of the uveal tract are stated, and its peculiar anatomical and physiological relation, especially to the retina and avascular structures of the eye: the vitreous body, lens and cornea are pointed out. Developed from the ectoderm and mesoderm, it is the vascular and nutrient membrane of the eye, liable to participation in all of the systemic diseases affecting like structures elsewhere in the organism; for example, the affections of the cardiovascular system; infections as in syphilis, tuberculosis, gonorrhea, gout, arthritis deformans, or the diseases of nutrition as in diabetes. Since the nutrition of the eye depends so largely upon the nutritive supply by this membrane, it is obvious that interference with this function by disease must seriously threaten impairment or destruction of the visual function.

Clinical experience affords ample demonstration of the correctness of such a deduction, since as sequelæ are seen vitreous degeneration, choroidal atrophies at the posterior pole, increased tension of the ball as presented in the syndrome of glaucoma, or in distention of the globe as in myopia, swelling, opalescence or opacity of the crystalline lens, corneal disease and inflammation of the iris. Therefore, the diseases of this membrane and their sequelæ furnish one of the most important chapters in ophthalmology.

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*Dr. SEALE HARRIS, Editor
Dr. M. Y. DABNEY, Acting Editor
Dr. J. R. GARBER, Associate Editor
C. P. LORANZ, Business Manager

*Lieutenant-Colonel, Medical Corps, U. S. Army, on active duty. Granted leave of absence for period of war.

VOL. XII APRIL 1919 No. 4

EDITORIAL DEPARTMENT

THE SOUTHERN MEDICAL ASSOCIATION AND ITS JOURNAL—A STATEMENT BY THE SECRETARY-EDITOR

In October, 1917, when I entered the Medical Reserve Corps of the United States Army, like other physicians from civil life who gave up their private work to enter the Service, I determined to give all my energies, and the best that was in me, in performing the duties which might be assigned me by my superior officers. However, since for ten years I had found time to edit a medical journal, in addition to earning a livelihood practicing medicine, I had hoped to contribute at least occasional editorials to THE SOUTHERN MEDICAL JOURNAL. In this I have been disappointed, because during my eighteen months of Army work, my time has not been my own, and I have found time to write only three editorials for THE SOUTHERN MEDICAL JOURNAL—none in the past year. THE JOURNAL, however, has not suffered by the absence of its Editor, as those know who have read its columns for the past year and a half.

Before I was commissioned in the Army, Mr. Loranz, the Business Manager, and I had many conferences as to which of us should enter into war work. He wanted to go to an officers' training camp, but finally gave up the ambition because of my insistance that his services were absolutely necessary for carrying on the work of THE SOUTHERN MEDICAL JOURNAL and the Southern Medical Association. There was no one to take his place, while my work could be carried on perfectly well by Dr. M. Y. Dabney, who had been Associate Editor for several years. Dr. Dabney also wanted to enter the Medical Reserve Corps, but was prevented because of a physical disability which, while it does not interfere with the practice of surgery, precluded all possibility of his entering the Army. Dr. Garber, who was added to the staff as Associate Editor in 1917, applied for a commission in the Medical Reserve Corps, but he, too, was refused a commission because of a physical disability, which, which, though not in the least a handicap in the practice of obstetrics, kept him out of the Army.

THE SUCCESSFUL CONDUCT OF THE JOURNAL DURING THE WAR

With Mr. Loranz's promise to remain with THE JOURNAL during the war, and with the Managing Editor and Associate Editor unable to get into the Medical Reserve Corps, there could be no doubt that THE SOUTHERN MEDICAL JOURNAL would weather the storms of war and come out of it on a firmer basis than ever before. This prediction has been realized. THE JOURNAL not only rendered valuable service in disseminating medical and surgical information among medical officers in the Army, both in the United States and France, but it has also carried the message of scientific medicine and disease prevention to physicians who could not go into war work.

I heard many kind expressions regarding THE SOUTHERN MEDICAL JOURNAL from medical officers in France, 'though they complained of the mail service over

there, which often deprived them of the pleasure of reading their favorite medical journal. Since I have contributed only three editorials to THE SOUTHERN MEDICAL JOURNAL in eighteen months and have had nothing to do with its policy, I can say with perfect propriety that the compliments that I have heard show that THE SOUTHERN MEDICAL JOURNAL can be carried on by the present organization without advice or assistance from its former Editor. Realizing this fact, however, does not make me any the less keen to help in its work, and I hope, from this time on, at least to contribute something to its editorial columns each month.

THE JOURNAL has been a success in the past because of the fact that it has had the co-operation and assistance of many of the leading men in the sixteen Southern states. Its original articles, most of which have been read before the Southern Medical Association, and its Authors' Abstracts, have been of such value that THE JOURNAL has built up a standing for excellence second to no medical journal in the country. The men who were interested in the welfare of THE SOUTHERN MEDICAL JOURNAL before and during the war, will continue in its upbuilding; and there can be no doubt that in the future THE JOURNAL will continue to grow in influence and usefulness.

THE SOUTHERN MEDICAL ASSOCIATION

It is wonderful to be back in the United States again, and it is delightful to hear from prominent medical men their opinion regarding the great field of usefulness and the opportunity for the Southern Medical Association in the renaissance in medicine, surgery and public health that is bound to follow the general upheaval in the medical profession that has taken place during the war. There can be no doubt that this great Association was helpful to the physicians of the sixteen Southern states and to the medical officers of the United States Army, Navy and Public Health Service before the war; and that it has played a worthy part during the greatest crisis in the history of our country. It is equally certain that the future will find the Southern Medical Association working for the improvement of public health conditions in the United States, particularly as related to tropical diseases (malaria, urcinariasis, pellagra, etc.) and that it will continue to foster the scientific spirit among its members. There is every reason, then, why its members should begin to discuss with each other, and with other conferees who are not members, plans for the further development of a medical organization whose aims are solely altruistic and which was designed for the purpose of elevating the standards of the medical profession.

A very large proportion of the members of the Southern Medical Association entered military service, but only a comparatively small number discontinued their membership during their military service. While the Association has lost a number of members during the war, the decrease has been less than was expected, and the loss will be more than regained when medical men become adjusted to post-war conditions. There was no effort to increase the membership during the war; and since no meeting was held in 1918 because of the epidemic of influenza, there has not been the usual number of new members. The Southern Medical Association has, however, held its own wonderfully well and it may be expected for it to have a rapid development from this time on.

ASSOCIATION WORK DURING THE WAR

There could be no doubt that the Southern Medical Association would not be neglected, with Mr. Loranz, Business Manager, and Miss Purifoy, his assistant, who have done most of the real work of the Association for several years, in the office; and acting on the advice of

our distinguished President, Dr. Lewellys F. Barker, who is very much interested in the affairs of the Association, and the Chairman of the Council, Dr. H. H. Martin, whose great mind and altruistic devotion to the Southern Medical Association have been largely responsible for the evolution and development of a great medical organization in the South. While I was sure that THE SOUTHERN MEDICAL JOURNAL would not suffer by the absence of its Editor during the war, I was equally certain that the Southern Medical Association could be carried on as well without its Secretary as if he were in his office in Birmingham. This opinion has been proven correct by the results obtained.

It should be stated here that Dr. H. H. Martin, in 1917, made two trips from Savannah to Washington trying to have his physical disability waived in order that he might be allowed to serve in the Army. His friends urged that he should be given a commission since the injury which he sustained in an automobile accident several years ago does not in the least incapacitate him from practicing the specialty of ophthalmology and otolaryngology, to which work he desired to be assigned; but there was an Army regulation, which the Surgeon-General said could not be waived, which prevented his being commissioned. Dr. Martin was, therefore, forced to serve in Savannah during the war — unfortunately for the peace of mind of a 100% patriot, but a very fortunate thing for the Southern Medical Association.

THE NOVEMBER MEETING

Plans have already been made for the next meeting, at which time many matters will be discussed that will be of great interest to Southern physicians. Many have regretted that the 1918 meeting had to be given up on account of the epidemic, but there is no doubt of the wisdom of postponing it. The 1919 meeting should be larger and better than any previous meeting. It will be the occasion for the reunion of many physicians who have not seen each other for two years, and it will furnish an opportunity for summing up the advances in medicine, surgery and public health that were made during the war.

Many of our members have served in France, England, Italy and other countries where they have had the opportunity to study conditions there, and they will bring back methods and new procedures in the diagnosis and treatment of disease that can be applied in private practice. The war is over, but we can learn from its lessons; and the November meeting of the Association, while a "peace" meeting, will afford the opportunity to discuss many problems that war conditions have helped to solve.

THE SECRETARY'S PLANS AND AN APPEAL

Having been in charge of the Section on Gastro-Enteralogy in the Division of Internal Medicine in the Surgeon-General's Office, and having organized the work in gastro-intestinal diseases in a number of Army hospitals, I have been assigned to write the chapters on digestive diseases in the "Medical History of the War" that is being prepared in Washington. Just how long this work will keep me in the Army can not be determined at this time; but I hope soon to return to private practice when I can make the opportunity to devote one or two hours a day to the work of the Southern Medical Association and THE SOUTHERN MEDICAL JOURNAL, as I did for some years before the war.

The interest and co-operation of the progressive element of the medical profession in the South with the officers of the Southern Medical Association were responsible for its growth from 300 members to more than 5,000 in the five years previous to the war. With a little united effort the membership can be increased to 10,000 in the next five years. While numbers are important in increasing the influ-

ence of a medical association, the *esprit de corps*, and the high standards that have been responsible for the prestige which the Southern Medical Association has earned must be maintained to make it a greater power for uplifting the medical profession in the states from which its membership is drawn.

When I contemplated entering the Medical Reserve Corps I tendered my resignation as Secretary of the Southern Medical Association and as Editor of THE SOUTHERN MEDICAL JOURNAL. The Association honored me by refusing to accept it, but gave me a leave of absence for the duration of the war. Now that I am again taking up my duties with the Association and THE JOURNAL, I feel the need of the advice and help of those who have been interested in the upbuilding of a great medical association and high-class medical journal representing the entire South. Several enthusiastic members have already made suggestions which, when adopted, I believe will increase the usefulness of both the Association and THE JOURNAL. Others no doubt have thought of improvements that can be made in the policies or conduct of the Association and JOURNAL which would make them of greater value to those whom we try to serve. The Southern Medical Association and its JOURNAL belong to its members; and any suggestions which they may offer intended to make their Association and JOURNAL better and more helpful to the medical profession in the South, will be gratefully and considerately received.

SEALE HARRIS,
Secretary, Southern Medical Association.
Editor, SOUTHERN MEDICAL JOURNAL.

TYPHOID AND PARATYPHOID FEVERS

One of the great triumphs of the practical application of scientific medicine has been the results that have been obtained by the use of typhoid fever vaccines during the recent mobilization and training of American soldiers. It is in marked contrast to the serious epidemics of typhoid fever that occurred in various camps during the Spanish-American War.

While the incidence of typhoid and paratyphoid fevers in the camps and cantonments of the United States was remarkably low, recently there have been limited outbreaks among the soldiers in France and Germany. Whether these cases are due to the waning immunity from the typhoid vaccines which were administered to the soldiers, one and a half years ago, or to the insanitary environment in which the soldiers are now living, added to a relaxation in carrying out the regulations regarding personal and camp hygiene, has not been positively determined. It is also possible that these fevers are due to other organisms, or strains, of the typhoid group of bacteria than those contained in the vaccines that are administered to our soldiers.

Whatever the cause may be of the sporadic, and sometimes small epidemics, of fevers that are occurring among our soldiers in France, the Medical Department of the American Expeditionary Forces is attacking the problem with characteristic vigor and good judgment, and it is to be expected that there will be few more of typhoid or paratyphoid cases among our soldiers stationed abroad. A circular has recently been issued from the Chief Surgeon's office which presents the most practical and the most authoritative discussion of the epidemiology, clinical and laboratory diagnosis and the prevention of typhoid and paratyphoid fevers that has appeared in recent literature. This comprehensive discussion has not been published previously in any medical journal, so far as we know, and since much that is contained in it is applicable to handling this important disease in civil life, it is

reproduced in this number of THE SOUTHERN MEDICAL JOURNAL.

The policy of the Medical Department of the Army in demanding that each new case of typhoid or paratyphoid be regarded by the medical officer who treats it as the "first case of an epidemic" and that each patient shall be regarded for several months as a "carrier," should be adopted in civil practice.

When a physician is sent for to see a case of typhoid fever, or any other communicable disease, it is just as much his duty to protect the other members of the family, and the community in which he practices, from infection as it is to treat the patient. Indeed, the physician is under greater obligations to prevent typhoid fever than he is to treat a given case, because usually the patient will get well without medicine, while if the bedside technic of destroying every source of infection that comes from the patient is not properly carried out, other cases, and probably epidemics, are sure to occur.

Typhoid and paratyphoid fevers are still entirely too prevalent in the South, and physicians who come in contact with these preventable diseases will find much that will be helpful to them in the extracts from the circular sent out by the Chief Surgeon of the American Expeditionary Forces to medical officers in France and Germany.

THE VICTORY LOAN

As preventive medicine has come to be a great factor in individual well being, so has preventive warfare been recognized as a means of national safety. The lives of countless thousands of American soldiers were saved by the early termination of the war due to the sudden crumbling of the German war machine.

Tons of ammunition and limitless supplies of men, ships and airplanes were the deciding factor which brought conviction of their ultimate defeat to the exponents of Prussian militarism. Some of the supplies had not even left America, but the knowledge that America was 100 % in the struggle, won the war without the sacrifice of more lives.

Again we shall be asked to help foot the bill by subscribing to the Victory Liberty Loan. The billions of dollars which the Government asks the Nation to invest is little to balance against a hundred thousand lives. Conservative Government estimates place the additional American casualty list at this figure had the war continued 'till spring.

The physicians' task is not completed until the patient has entirely recovered. Our duty to our Government is not over until the last war debt has been met. This debt can not be paid unless each individual assumes his or her share of the Nation's obligation. That responsibility is increased rather than lessened by the fact that the actual warfare is over.

Too many physicians and surgeons find that after recovery patients forget the service rendered. They neglect to pay promptly for the expert care which ended their suffering and removed its cause. American citizens who, by their apathy, do not support the Government by a loan of their savings — present and prospective—are in the class with the bad debtor.

It was comparatively easy to share in carrying the war to a successful end when our men were beating back the German armies. It should be equally so in helping finish the job now that the end for which America was striving is achieved.

The need to "carry on" remains. The men and women of the medical profession can add to their already illustrious record by urging support of the Nation's financial program among the families of their practice, and by their own individual subscriptions for as much as they can carry.

PUBLICATIONS OF ARMY AND EX-ARMY OFFICERS

March 20, 1919.

Memorandum For: Editors of Medical Periodicals.

As stated in the circular memoranda for Editors of Medical Publications issued by the Surgeon-General's Office on March 27 and May 22, 1918, it is required by paragraph 423, Manual of the Medical Department, that all medical manuscripts by medical officers, U. S. Army, intended for publication shall be first submitted to the Surgeon-General's Office, Washington, D. C., for approval. This regulation, which has been very courteously complied with, to date, is still in force as far as medical officers on active duty are concerned. In the case of medical officers recently retired from active duty, it is requested, as a courtesy to the Surgeon-General and in aid of assembling material for the Medical History of the War, that all medical manuscripts based upon military or official records or upon military experience during the war, be submitted as heretofore to the Secretary, Board of Publications, Surgeon-General's Office, Washington, D. C., for record and approval and that such MSS. be accompanied by a carbon copy. Upon approval, the original copy will be forwarded to the journal designated, for publication, and the carbon will be filed in the records of the Medical History of the War.

For the Surgeon-General.

(Signed) C. R. DARNALL,
Colonel, Medical Corps, U.S.A.,
Executive Officer.

Book Reviews

The Disabled Soldier. By Douglas McMutrie, Director, Red Cross Institute for Crippled and Disabled Men; President, Federation of Associations for Cripples; Editor, American Journal of Care for Cripples. 232 pages, illustrated. New York: The Macmillan Co., 1919. Cloth $2.00.

The author's object has been to collect material that has appeared from time to time in pamphlet form, and with additional matter to rework it into more readable form as presented in this book.

After a historical survey of the world's attitude toward cripples in general, and war cripples in particular, he considers the rehabilitation in four phases: medical treatment; provision of artificial limbs, and functional re-education; vocational advice and vocational re-education; and placement.

There are well-selected illustrations of soldiers in many lands in process of rehabilitation which add to the interest of the text.

Diet and Health With Key to the Calories. By Lulu Hunt Peters, A.B., M.D., ex-chairman Public Health Committee, California Federation of Women's Clubs, Los Angeles District. 105 pages, illustrated. Chicago: The Reilly & Britton Co., 1919. Cloth $1.00.

This is the most entertaining "health book" it has been our lot to see for many moons. But it is more than that. It is a little volume of sound common sense.

While its title is a take-off on Mary Baker Eddy's "Science and Health With Key to the Scriptures," the book is intended for the thin who wish to gain, and for the fat who wish to reduce. Thin readers may feel that the author has been unduly partial in the attention shown to the fat; this may be due to patriotic reasons, as we are told that to hoard fat in our anatomy is as wicked as to hoard food in our pantries, or it may be due to the fact that the author- self-confessedly, once belonged to the ranks of the obese and has herself conducted a winning fight against mortal flesh.

But the whole volume is a triumph for the thin, if there is any truth in the old adage, for it is mirth-provoking from beginning to end. The drawings are not to be overlooked, as they add greatly to the delight of the book and will probably cause many a public librarian to wonder whether the book should be shelved with health or humor.

There is much helpful and simply-worded advice for gaining as well as for losing weight. The diets and calorie tables, as well as the setting-up exercises, are of value for ready reference.

Southern Medical News

ALABAMA

The Clarke County Medical Society met in Jackson early in April. Dr. W. W. Harper, of Selma, and Dr. H. P. Cole, of Mobile, both recently returned from Army service, were guests and made addresses. A banquet dinner was given at the Choctaw Inn, and the Society was the guest of Dr. and Mrs. L. O. Hicks for supper.

Dr. A. M. Stovall, of Jasper, had a narrow escape from drowning when he fell in the river at Mobile going on board the steamer Apollo for a trip on the river and bay which was tendered the doctors in session at the State meeting. Captain Roberts rescued him and because of his bravery the Medical Association adopted a resolution commending Captain Roberts to the Carnegie Commission.

Dr. J. E. Evans has removed from Fulton to Mobile and opened offices in the Van Antwerp Building.

Dr. Groesbeck Walsh, Birmingham, who has been on active service overseas in the Medical Corps of the Navy, has been discharged and has resumed his practice in Birmingham.

Dr. Russell M. Cunningham, Birmingham, who has retired from active practice, has presented to the Jefferson County Medical Society a medical library consisting of very valuable books. This donation was made because of Dr. Cunningham's appreciation of the work of the Society, of which he has been a member for many years.

Dr. D. W. Ward, Tuscaloosa, has resumed his practice after an extended service in the Medical Corps of the Army.

Dr. E. Swann, Marion, has resumed his practice after an extended service in the Medical Corps of the Army.

Dr. Henry W. Grady, Lafayette, who went into the Medical Corps as a Lieutenant, was recently commissioned a Major. Before entering the Service he was interne at the St. Vincent's Hospital, Birmingham.

At the recent meeting of the Surgeons of the Alabama Power Company in Birmingham, the following officers were elected: Dr. T. J. Brothers, Anniston, President; Dr. C. L. Guice, Gadsden, Vice-President; Dr. J. F. Alexander, Jasper, Secretary-Treasurer.

Deaths

Dr. R. F. McConnell, Attalla, aged 65, died April 1, after an illness of several months.

ARKANSAS

Dr. A. P. Riddler was recently chosen as the third member of the Fort Smith District Board of Health created by the recent Legislature.

Dr. G. H. Buffington, Decatur, has purchased the property of Dr. G. H. Hughes at Gravette and will soon remove his offices there.

Dr. Luther Collens, of Huntsville, after taking a post-graduate medical course at New Orleans, has returned and resumed his duties as County Health Officer.

Dr. W. T. Lowe, Pine Bluff, has resumed his practice after a service in the Medical Corps.

Dr. Luther Stout, who has been in the service for some time, has been discharged and will resume his practice in Pine Bluff.

Dr. H. B. Thompson, Paris, has removed to Fort Smith.

Dr. F. D. Smith, of Alicia, has moved his offices to Blytheville.

Dr. M. B. Owen, who formerly lived at Eight Mile, has removed to Remmell.

Dr. Thomas J. Wood is connected with the State Board of Health at Little Rock. He formerly lived at Evening Shade.

The Benton County Medical Society met in Rogers in March and elected officers for the new year as follows: President, Dr. W. J. Curry, Rogers; Vice-President, Dr. T. E. Hodges, Garfield; Secretary-Treasurer, Dr. C. A. Rice, Rogers; Board of Censors: Dr. E. J. Highfill, Cave Springs, and Dr. R. S. Rice, Rogers.

The Crawford County Medical Society held its annual election in Van Buren the latter part of February. Officers elected as follows: President, Dr. G. Lucas, Van Buren; Vice-President, Dr. A. C. Galloway, Alma; Secretary, Dr. S. D. Kirkland, Van Buren; Treasurer, Dr. O. M. Bourland, Van Buren; Delegates to the State Medical Association: Dr. W. L. Parchman, Van Buren; Alternate, Dr. O. M. Bourland, Van Buren.

Deaths

Dr. Luke P. Davidson, Hollywood, aged 41, committed suicide by taking poison on March 22 in a hotel in Little Rock.

FLORIDA

Dr. F. C. Moor, Tallahassee, has been discharged from the Army service and has resumed his practice.

Dr. J. Newton McCartney, who has been on service overseas for some months, has been discharged and has resumed his practice at Miami.

Some time the first part of April a conference was held between the officials of the State Board of Health and the medical men of the several railroad lines in regard to changing the rules of governing sanitation on the systems operating in the State. Those in the conference for the State Board of Health were Dr. W. H. Cox, State Health Officer, and Chief Sanitary Engineer George W. Simmons, Jr.; the railroad officials in the conference were Dr. G. G. Thomas, Medical Director of the Atlantic Coast Line Railroad, with headquarters at Wilmington, N. C.; Dr. Joseph M. Burke, Chief Surgeon of the Seaboard Air Line Railroad, headquarters, Petersburg, Va.; and Dr. W. M. Seagers, Chief Surgeon of the Florida East Coast Railroad. They discussed changes in sanitary matters on trains and at terminals. Early in May another meeting will be held with the same railroad officials, together with Dr. Thomas R. Crowder, of the Pullman Company, of Chicago, when a conclusion will be reached.

Dr. R. D. Ferguson, who was in the Service for several months, and twice wounded, has been discharged and is in practice at Reddick.

Dr. W. J. Lancaster, Tampa, has resumed his practice after a service in the Army.

GEORGIA

The meeting of the Georgia Medical Association was held in Atlanta April 16-18. A number of distinguished guests were present. One of the main topics discussed was the control of cancer. The State, County and Municipal Health Officers' Association, operated this year as the Public Health Section of the State Medical Association, held its meeting April 16. Officers of Fort McPherson were hosts to the Convention on Thursday and regular sessions were held in the Red Cross House at the Fort.

Drs. D. M. Bradley and C. A. Witmer have been discharged from the Army service and returned to Waycross to resume their practice.

Dr. Lawrence Lee, Savannah, has been discharged from the Service and has resumed his practice.

Dr. W. W. Young, who was on the staff of the Atlanta Medical College for a number of years, has been promoted to Captain in the Medical Reserve Corps. He has returned to Atlanta and opened up offices in the Hurt Building.

Dr. J. P. Kennedy, City Health Officer, Atlanta, in March urged all citizens of Atlanta to be vaccinated, as there were at that time 121 smallpox patients confined in the Contagious Disease Hospital.

Dr. H. R. Donaldson, Atlanta, has returned to resume his practice after a year's service in the U. S. Naval Reserve forces as Lieutenant-Commander of the Grady Hospital Unit.

Dr. Wm. E. Conway, formerly of Athens, but now of College Park, has been appointed surgeon in the Volunteer Medical Corps of the U. S. Army.

Dr. H. R. Slack, LaGrange, recently discharged from the service of the Army, addressed the Troup County Medical Society on March 27.

Public health officers are very much in demand in Georgia, so much so that the Medical Department of the University of Georgia, Augusta, is planning to establish a special department offering a course in public health work to increase the supply of trained officers. The course at the College, as planned by the faculty, will be open to practicing physicians and students of the College.

At the meeting of the Whitfield County Medical Society at Dalton the latter part of March the following officers were elected for the year: President, Dr. H. J. Ault, Dalton; Vice-President, Dr. J. H. Steed, Dalton; Secretary-Treasurer, Dr. B. L. Kennedy, Dalton.

Dr. E. G. Ballenger, Atlanta, some time ago was promoted from Captain to Major in the Medical Corps of the Army. When the Emory Unit, with which Dr. Ballenger was connected, embarked for America, Major Ballenger was transferred to the Seventh Corps of the Army of Occupation, now stationed at Willtich, Germany.

The Sumter County Medical Society held its annual election of officers at Americus on April 11 with the following result: President, Dr. Taylor Lewis, Americus; Vice-President, Dr. W. S. Prather, Americus; Secretary-Treasurer, Dr. J. T. Stukes, Americus; Censors, Dr. H. B. Allen and Dr. R. P. Glenn.

Dr. R. S. O'Neal, LaGrange, has recently been discharged from the Service of the Army and has resumed his practice.

Deaths

Dr. Wm. H. Elliott, Savannah, died April 1.

Dr. Giles Hathcock, Lula, died of apoplexy April 1 on the Southern train while being rushed from Lula to Atlanta for treatment.

Dr. Kennon Mott, Atlanta, died of heart trouble April 8.

Dr. Samuel H. Green, aged 55, died of heart trouble April 3.

KENTUCKY

Six returned members of the West End Medical Society, Louisville, who served in the M. C. of the Army, were guests at a banquet given in their honor on April 8. They were Dr. J. B. Lukins, Dr. J. G. Sherrill, Dr. I. A. Arnold, Dr. J. K. Freeman, Dr. C. T. Nichols and Dr. F. T. Fort.

Dr. Ned Yost, Greenville, has removed his offices to Kirmansville.

Dr. E. W. Montgomery, Vine Grove, in service in France, has been promoted to rank of Captain.

Several changes have been made in the personnel of the City Health Department of Louisville by the Board of Public Safety. Dr. W. B. Foreman, who was medidcal school inspector, during the war, resigned and was later succeeded by Dr. Fred C. Thum.

Dr. J. G. Sherrill has resumed his practice in Louisville after several months service in the Army.

At the annual meeting of the Lawrence County Medical Society the following officers were elected: President, Dr. D. J. Thompson; Secretary-Treasurer, Dr. J. O. Moore.

At the annual meeting of the Leslie County Medical Society the following officers were elected: President, Dr. G. W. Campbell; Vice-President, Dr. D. F. Hamilton; Secretary, Dr. H. W. Gingles.

At the annual meeting of the Madison County Medical Society the following officers were elected: President, Dr. J. W. Scudder; Vice-President, Dr. J. G. Bosley; Delegate, Dr. D. J. Williams; Censors, Dr. J. H. Rutledge, Dr. M. Dunn and Dr. H. G. Sandlin.

At the meeting of the McCreary County Medical Society held at Worley early in December, the following officers were elected: President, Dr. H. W. Fitzpatrick; Vice-President, Dr. S. S. Foster; Secretary, Dr. R. M. Smith; Delegate, Dr. W. R. Dundiff.

At the meeting of the Trimble County Medical Society in Bedford on January 13, the following officers were elected: President, Dr. J. W. McMahan; Vice-President, Dr. F. W. Hancock; Secretary, Dr. C. P. Harwood.

The Christian County held its annual meeting in March and elected the following officers: President, Dr. J. W. Harned; Vice-President, Dr. J. L. Barker; Secretary-Treasurer, Dr. Philip E. Haynes; Delegates to the State Convention, Dr. P. E. Haynes and Dr. F. M. Stites; Alternates, Dr. R. L. Woodward and Dr. W. S. Sandbach.

At the annual meeting of the Fulton County Medidcal Society the following officers were elected: President, Dr. J. M. Hubbard; Vice-President, Dr. R. N. Whitehead; Secretary-Treasurer, Dr. J. A. Phelps; Delegate to the State Convention, Dr. S. Cohn; Alternate, Dr. C. A. Wright; Censors, Dr. W. D. Henry, Dr. G. L. Major and Dr. J. M. Alexander.

At the annual meeting of the Henderson County Medical Society, on December 30, 1918, the following officers were elected for the year 1919: President, Dr. G. M. Royster; Vice-President, Dr. Ira D. Cosby; Secretary and Treasurer, Dr. Peyton Ligon; Delegates, Dr. W. S. Forwood, Dr. Wm. M. Floyd; Alternate, Dr. E. N. Powell; Censor, Dr. Silas Gricin.

At the annual meeting of the Lyon County Medical Society the following officers were elected: President, Dr. C. H. Linn; Vice-President, Dr. J. H. Hussey; Secretary-Treasurer, Dr. W. G. Kinsolving; Delegates, Dr. D. J. Travis, Dr. W. G. Kinsolving; Censors, Dr. D. J. Travis, Dr. A. D. Purdy, Dr. L. P. Molloy.

Deaths

Dr. J. H. Murray, formerly of Uniontown, died at his home in Providence, R. I., sometime in February.

Dr. Jas. L. Wilds, Nicholasville, aged 24, died of tuberculosis, early in March.

Dr. G. W. Wroten, Louisa, aged 81, died April 9.

Dr. Arthur Robertson, Hopkinsville, aged 24, died in France on November 14 from wounds received while in action, followed by pneumonia.

Dr. T. D. Finck, Louisville, died of bloodpoisoning caused by mashing his finger in a gate while calling on a patient,

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LOUISIANA

At the annual meeting of the Ouachita Parish Medical Society, held in Monroe, the following officers were elected: President, Dr. J. G. Graves; Vice-President, Dr. T. W. Wright; Secretary-Treasurer, Dr. F. C. Bennett; Delegate, Dr. R. W. Faulk; Alternate, Dr. R. W. O'Donnell.

At its regular annual election on February 12 the St. Tammany Parish Medical Society elected the following officers for the year: President, Dr. R. B. Paine, Mandeville; Vice-President, Dr. N. M. Hebert, Covington; Secretary-Treasurer, A. G. Maylie, Mandeville; Delegate, Dr. A. G. Maylie, Mandeville; Alternate, Dr. H. D. Bulloch, Covington.

Dr. C. S. Holbrook has resigned his connection with the East Louisiana Hospital for the Insane at Jackson and will practice his profession in New Orleans.

Dr. C. L. Mengis, who has recently been dis-

charged from the Medical Reserve Corps, has opened offices in Monroe.

Dr. Charles W. Barrier, Jr., was recently married to Miss Leonora Mayberry, of Franklin, Tenn.

Dr. M. R. Cushman has recently removed from Baton Rouge to Prairieville.

Dr. F. T. Beatrous, of New Orleans, recently married Miss Grace Phyllis Hayne, of Boyce.

Dr. Chas. J. Bloom, of New Orleans, was recently married to Miss Gladys Marie Reiss, of New Orleans.

Dr. J. B. Elliott, Jr., after quite an extended service in the Army, has been discharged and has resumed his practice in New Orleans.

The Louisiana State Medical Association held its annual meeting in Shreveport on April 8, 9, 10. The following officers were elected: President, Dr. E. Lee Henry, Lecompte; Vice-Presidents: Dr. C. P. Gray, Monroe; Dr. S. C. Barrow, Shreveport; Dr. T. J. Dimitry, New Orleans; Secretary, Dr. E. W. Mahler, New Orleans; Secretary, Dr. E. W. Mahler, New Orleans; Delegates to the American Medical Association, Dr. W. H. Seamann, New Orleans; Dr. Paul Gelpi, New Orleans, and Dr. Charles Pierson, Jackson. The Convention was featured by numerous smokers and luncheons, the North Louisiana Sanitarium having been host at one of the luncheons.

State Health Officer Oscar Dowling is busy organizing a clinic in New Orleans for the purpose of providing diagnosis for those in needy circumstances.

Dr. Oscar Dowling, State Health Officer, has recently made inspection of the City Markets in New Orleans, declaring that through this means better babies, better men and better women will be the result.

The meeting of drug store owners of Louisiana, Mississippi, Arkansas and Alabama held its convention in New Orleans during March, at which time they were addressed by Dr. Dowling and other prominent Louisiana physicians.

Dr. Sidney J. Braud, recently discharged from the Medical Corps, U. S. Army, has joined the staff of the Child Welfare Association in New Orleans and will hold clinics in the French section of the city.

A commission of medical relief of the United States Railroad Administration has recently completed a survey dealing with hookworm, malaria, venereal and febrile diseases and the measures that are being taken to prevent them in New Orleans.

MARYLAND

Dr. G. O. Sharrett, after an extended service in the Army, has now been discharged and resumed his practice at Cumberland.

MISSISSIPPI

At a recent meeting of the Biloxi Hospital Association, Dr. H. M. Fowlkes, founder of the hospital, resigned as President and Rev. Byron Holley was elected in his place. The Treasurer's report showed the institution entirely free of debt and

(Continued on page 26)

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PITMAN-MOORE COMPANY
PHARMACEUTICAL & BIOLOGICAL CHEMISTS
INDIANAPOLIS

(Continued from page 230)

two thousand dollars in the treasury—an unusual condition for a hospital devoted entirely to charity.

Dr. J. E. Wallace has been discharged from the Army service and resumed his practice at Biloxi.

Dr. C. R. Senter has been discharged from the Army Service and has removed his offices to Byhalia.

The Central Medical Society held a meeting at the Mississippi State Sanatorium for Tuberculosis, at Sanatorium on April 15, at which Dr. W. S. Leathers, Dr. C. C. Mitchell and Dr. Henry Boswell made addresses.

The Clarksdale and Six County Medical Association held a meeting the latter part of March in Clarksdale. It is said that this is the largest organization of physicians in the State except the State Association.

On April 16 the Mississippi Four-County Medical Society was organized. This Society comprises the counties of Benton, Lafayette, Marshall and Yalabusha. Dr. W. S. Leathers, President of the Mississippi State Medical Association, said he was very much gratified at this forward step and that since Benton has organized and Humphreys is organizing there remains in the State only three counties, Kemper, Leake and Tishomingo, unorganized. The officers elected for the North Mississippi Four County Medical Society were: President, Dr. W. W. Mathews, Oxford; Vice-President, Dr. C. Sissler, Water Valley; Secretary, Dr. I. B. Seal, Holly Springs; Assistant Secretaries, from Benton, Dr. Frank Ferrell, Ashland; Dr. E. S. Bramlett, Lafayette; Dr. O. G. Coleman, Yalabusha. The President and Secretaries constitute the Board of Censorship for passing on applications for membership.

Dr. H. R. Shands has removed from Jackson to Colorado Springs, Col.

Dr. Willis Walley, Jackson, has removed his offices to 212½ West Capitol Street.

Deaths

Dr. J. T. Evans, Pascagula, died April 13, after an illness of twenty-one days with pneumonia.

Dr. Thomas H. Sea, Laurel, aged 36, died at his home from pneumonia following influenza.

MISSOURI

During March the Ray County Medical Society held a meeting at the courthouse in Richmond for the purpose of electing officers for 1919. Those chosen were: President, Dr. Thos. B. Cook, Rayville; Vice-President, Dr. L. D. Greene; Secretary, Dr. R. L. Hamilton; Treasurer, Dr. E. T. McGaugh.

Dr. Frank B. Long, Captain, Medical Corps, U. S. Army, Sedalia, was married in New York during April to Miss Annie Ruby Dillard.

Dr. Carl A. Nylund has been succeeded at attending physician to the Tuberculosis Hospital at Kansas City, by Dr. K. W. Kinard, formerly Lt.-Col. in the U. S. Medical Corps.

NORTH CAROLINA

On March 8 the Robeson County Medical Society held its meeting in Lumberton at which time officers for 1919 were elected as follows: Dr. W. E. Evans, Rowland, President; Dr. T. C. John-

(Continued on page 28)

Laboratories of Drs. Bunce and Landham

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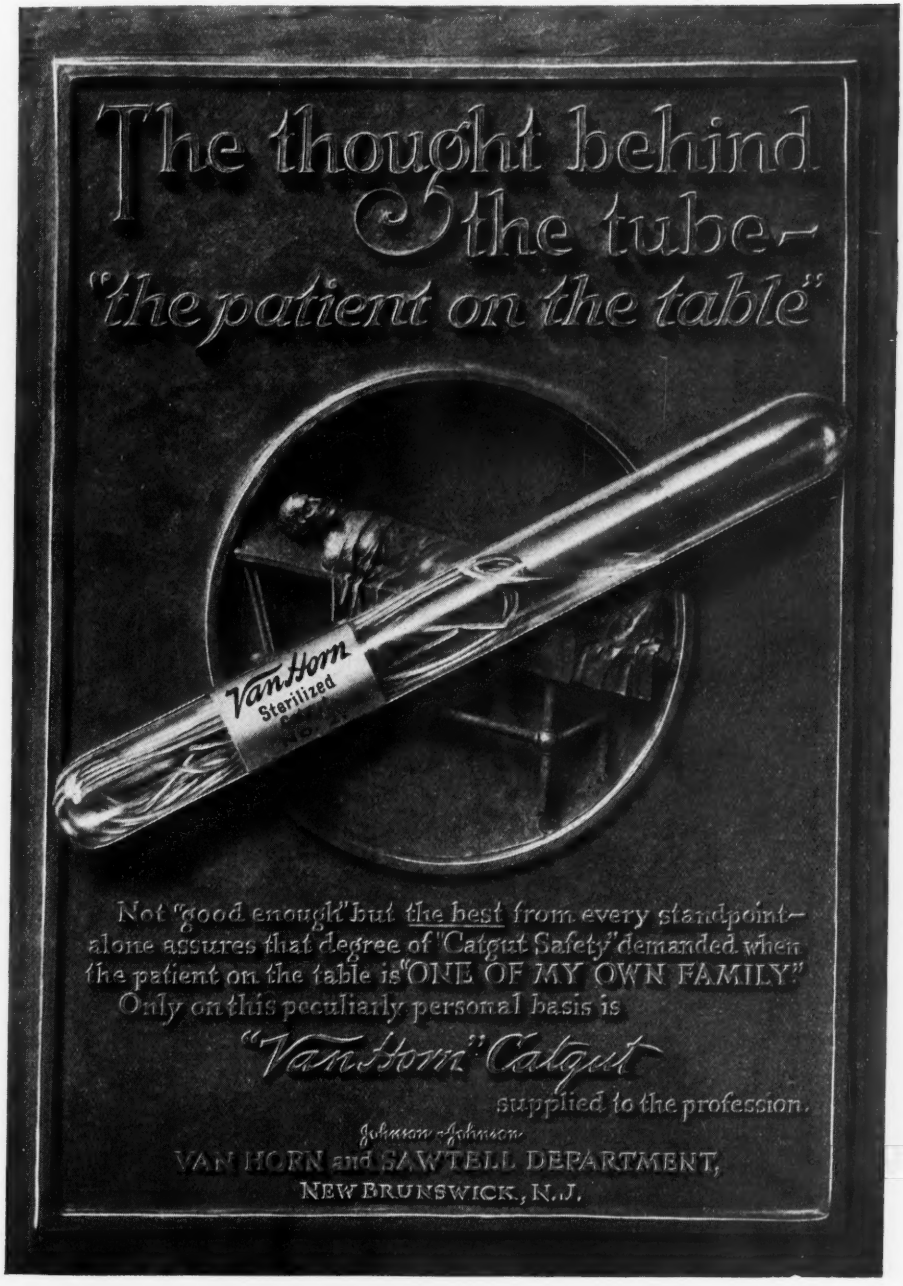
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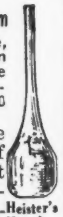

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List on Application **CINCINNATI, OHIO, U. S. A.**

(Continued from page 26)

ston, Lumberton, Vice-President; Dr. J. A. Martin, Lumberton, Secretary-Treasurer. The Society will meet in May in Rowland.

Dr. C. A. McLaughlin has recently been elected County Physician for Mecklenburg County.

Dr. Oscar J. Houser, Charlotte, and Miss Grace Elizabeth Baskerville, Raleigh, were married on March 4.

Dr. Frederick R. Taylor, has been discharged from the Army Service and has resumed practice at High Point.

Dr. Thel Hooks, of Smithfield, after an extended service in the Army, has been discharged and has resumed his practice.

Dr. Wm. H. Scruggs, Asheville, upon his return from the service in the Army, was elected as Health Officer of Bumcombe County.

Dr. S. D. Craig, recently discharged from the Medical Corps, has resumed his practice in Winston-Salem.

Dr. John McKee, recently discharged from the Medical Corps, U. S. Army, has resumed his duties as City Physician at Raleigh, succeeding Dr. W. W. Stancill, who filled his place during his absence.

The ninth annual meeting of the North Carolina Health Officers Association was held in Pine Hurst on April 14.

The North Carolina State Medical Association met in Pine Hurst, April 15, 16, 17, at which time papers on very important subjects relating to military and civil life were represented by eminent men from the State and prominent visitors.

Deaths

Dr. A. S. Capeheart, aged 67, Ronda, Wilkes County, died at a sanatorium in Charlotte, following a prolonged illness, on March 18.

Dr. J. M. Caldwell, aged 57, Gastonia, died very suddenly at his home on March 1.

Dr. Henry Sloan, aged 65, Ingold, died at his home February 10.

OKLAHOMA

Dr. Claude Thompson, Muskogee, was married on January 16 to Miss Alva Coulter, of the same city.

Dr. W. W. Rucks, Guthrie, has been discharged from the Medical Corps of the Army and has moved to Oklahoma City.

Dr. S. C. Davis, Oklahoma City, has resumed his practice, having been discharged from the Medical Corps.

Dr. Daniel W. White, Tulsa, and Miss Connor Trotter, Kansas City, Mo., were united in marriage on the 19th of February.

Dr. P. F. Herrod, El Reno, has been discharged from the Medical Corps and has resumed his practice.

Dr. A. T. Dobson, Hobart, has recently been appointed County Physician of Kiowa County.

Dr. J. J. Clark, Tishomingo, has recovered from an operation for appendicitis recently performed.

The following removals of physicians have been noted: Dr. S. E. Gayman, Tyron, to Okeene; Dr. J. T. Wharton, Duncan, to Miami; Dr. R. E. Johnson, Bridgeport, to Hobart.

(Continued on page 30)

When Mother's Milk Fails

The problem of artificially fed infants is of paramount importance at this time; first, because April and May are the principal birth-months of the year; and second, because the impending summer period inevitably increases the difficulty of obtaining fluid milk of assured purity.

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(3071)

(Continued from page 28)

Dr. A. J. Smith, Pawhuska, has been appointed County Physician for Osage County.

Plans for the erection of a hospital in Drumright have been approved by the Drumright Medical Society.

Dr. K. D. Gossam, Custer City, has succeeded Dr. Ellis Lamb as Health Officer for Beckham County.

Dr. Chester L. Hill, Haskell, was married to Miss Bertha Kennedy, Muskogee, on February 26.

The physicians of Bristow have recently organized the Bristow Medical Society.

The Okmulgee County Medical Society held its sixty-second session in Henryetta on April 13.

Dr. A. J. Fawcett, recently discharged from the Medical Corps, has opened offices in Okmulgee.

During the first week of April the Anti-Tuberculosis Association and Anti-Spit Campaign devoted its time to clean up and educational propaganda in Tulsa.

Deaths

Dr. Thomas B. Dickson, Ramona, was found murdered in his room in a Kansas City hotel recently.

Dr. T. J. Horsley, Mangum, aged 46, died from heart failure on January 3.

SOUTH CAROLINA

The Chester Board of Health has selected Dr. H. B. Malone, of Chester, as Chairman of the Board to take the place of Dr. S. W. Prior, deceased.

The South Carolina Medical Association held its annual convention in Florence April 16-18. At its final session, Lieutenant-Colonel E. W. Pressley, Greenville, was elected President; Dr. D. H. Smith, Florence, First Vice-President; Dr. O. C. Shecut, Orangeburg, Second Vice-President; Dr. C. A. Mobley, Rock Hill, Third Vice-President; Dr. E. A. Hines, Seneca, Secretary-Treasurer. The following were selected as members of the State Board of Medical Examiners: Dr. J. T. Taylor, Adams Run; Dr. Frank Lander, Williamston; Dr. Baxter Haynes, Spartanburg; Dr. J. R. Miller, Rock Hill; Dr. J. H. Taylor, Columbia. Dr. E. M. Whaley was re-elected on the State Board of Examiners of Opticians and Optometrists.

Dr. John D. Smyser has returned to his home in Florence following his honorable discharge from the Medical Corps.

Dr. Vance W. Brabham, Orangeburg, has resigned his position as Health Officer in Orangeburg County in order to resume the duties of a private practice. He will remain as Chairman of the City Board of Health.

Dr. R. S. Bailey, Columbia, has recently ac-

(Continued on page 32)

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(Continued from page 30)

cepted the position as Sanitary Field Director for Orangeburg County.

Deaths

Dr. H. L. Wilson, aged 57, Manning, died at his home March 22, following a prolonged illness.

TENNESSEE

The 86th annual convention of the Tennessee State Medical Association was held in Nashville April 8-9-10. At the close of the session the officers elected were: Dr. A. F. Richards, Sparta, President; Dr. A. W. Harris, Nashville; Dr. N. S. Walker, Dyersburg, and Dr. J. C. Brooks, Chattanooga, Vice-Presidents; Dr. Olin West, reelected Secretary; and Dr. J. F. Gallagher, Nashville, Treasurer. Chattanooga was selected as the next meeting place.

The West Tennessee Medical Society will hold its next convention in Dyersburg May 21 and 22.

Dr. H. L. Fancher, Chattanooga, is improving following a severe illness in the Erlinger Hospital.

Dr. James Brew, who has seen service overseas, has been discharged from the Medical Corps and is to resume his practice in Nashville at an early date.

The following Tennessee physicians have received their commissions as Captain in the M.C., U. S. Army: Dr. T. D. McKinney, Nashville; Dr. W. A. Howard, Cookeville, and Dr. M. W. Barnes, Cedar Hill.

Dr. A. E. Cooper, recently discharged from the Medical Corps, has returned to his home in Dyersburg, and will shortly leave for Memphis, where he will engage in the practice of his profession.

Dr. D. M. Henning, of Memphis, has been discharged from the Service of the Army and has resumed his practice.

The Hamblen County Medical Society has chosen the following officers for 1919: Dr. C. P. Carrol, Morristown, President; Dr. J. W. Pierce, Vice-President; Dr. J. F. Campbell, Secretary.

Dr. W. Bright, Chucky, was elected President of the Greene County Medical Society at its recent election. Other officers chosen were: Vice-President, Dr. R. O. Huffaker, Greenville; Secretary, Dr. M. A. Blanton, Baileyton.

Dr. E. D. Watkins has been discharged from the Army and has resumed his practice at Memphis. He has limited his practice to opththalmology.

Dr. E. T. West, after several months' service in the Army, has been discharged and resumed his practice in Johnson City.

The following physicians have been discharged from the Medical Corps, U. S. Army, and resumed their practice: Dr. Owsley Manier, Nashville; Dr. John M. Lee, Nashville; Dr. Albert W. Harris, Nashville; Dr. W. H. Witt, Nashville; Dr. W. G. Ruble, Morristown; Dr. J. F. Lane, Greenville; Dr. T. D. Cloyd, Mosheim; Dr. Wm. Bailey, Greenville; Dr. Jere Caldwell, Nash-

(Continued on page 34)

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Dark field for spirochete	5.00	Exam. of stool for dysentery group	5.00 to 10.00
Type determination for pneumonia	5.00	Exam. of stool for typhoid group	5.00 to 10.00
Exam. dog's brain for rabies	10.00	Exam. of urine for typhoid group	5.00 to 10.00
Autogenous vaccines	$5.00 to 10.00		

Bacteriologic exam. of infections of the respiratory tract ..... $2.00 to $10.00
Bacteriologic exam. of infections of the genito-urinary tract ..... $2.00 to 10.00
(Organisms are plated and identified)

Prices quoted upon request for special work of an epidemiological character, such as meningitis carriers, diphtheria carriers, etc.

BLOOD EXAMINATIONS

Wassermann test	$ 5.00	Blood grouping for transfusion	$5.00 to $10.00
Comp. fixation test for gonococcus	5.00	Malerial exam.	2.00
Differential cell count	2.00	Total cell count (red or white) each	2.00

Widals: Macroscopic when possible. Agglutination performed using Typhoid B, para-Typhoid A and B ..... $ 2.00

Tests also performed for the increasing titer of typhoid agglutinins in the patient's blood stream upon request.

BLOOD CULTURES:
Are sub-cultured and organism identified before submitting final report ..... $5.00 to $10.00

SPINAL FLUID

Wassermann test	$ 5.00	Sugar reduction	$ 2.00
Cell count	2.00	Globulin	2.00
Bacteriological work	$2.00 to $10.00		

URINE EXAMINATIONS

Routine chemical and microscopical ..... $ 2.00
Special examinations (each) 3.00

FECES

Examination for ova and parasites 2.00
(For bacteriologic work see bacteriologic exams.)

Stomach analysis ..... $ 5.00
Milk analysis ..... $ 5.00
Tissue Exam.: Reports prompt and accurate 5.00

Doctor: have you been satisfied with the character of the bacteriological service you have been receiving?

THIS IS OUR HOBBY. GIVE US A TRIAL.
CONTAINERS FURNISHED UPON REQUEST.

(Continued from page 32)

ville; Dr. J. O. Walker, Franklin; Dr. McPheeters Glasgow, Nashville; Dr. R. L. Gallagher, Careyville; Dr. Casa Collier, Memphis; Dr. Leopold Shumaker, Chattanooga.

Dr. T. B. Hughes, of Scott, Ark., has removed his practice to Cleveland.

Deaths

Dr. Benjamin Allen, aged 45, Chattanooga, died suddenly at his home April 11 following a brief illness.

Dr. Richard B. Maury, Memphis, died at his home March 19.

Dr. N. C. Steele, Chattanooga, after a brief illness of pneumonia, died at his home March 20.

Dr. B. G. Allen, aged 45, died very suddenly as a result of a breakdown at his home in Chattanooga April 11.

TEXAS

At a meeting of the Board of Managers of the Texas State Lunatic Asylum the following officers were elected: Dr. John L. Preston, Superintendent; Dr. J. T. Wilhite, to the Pasteur Institute.

Dr. Alex E. Harris, who has been engaged in rural saitary work for the State Health Department, has been appointed City Health Officer of Waco.

A regular meeting of the Bee County Medical Society was held February 11 and the following officers were elected: President, Dr. L. L. Griffin, Beeville; Vice-President, Dr. A. J. Turner, Beeville; Secretary, Dr. Houston Neeley, Beeville; Delegate, Dr. W. O. Brown, Beeville; Alternate, Dr. C. H. Reagan, Beeville; Censors, Dr. C. H. Reagan, Dr. G. M. Stephens and Dr. A. J. Turner; Committee on Medical Defense, Dr. H. Neeley and Dr. J. A. Malone.

At a recent meeting of the Bell County Medical Society the following officers were elected; President, Dr. J. S. McCelvey, Temple; Vice-President, Dr. J. M. Gooch, Temple; Secretary, Dr. R. T. Wilson, Temple; Censors, Dr. A. B. Crain, Dr. Taylor Hudson, Dr. J. M. Frazier, Belton; Delegate, Dr. L. W. Pollock, Temple; Alternate, Dr. G. V. Brindley, Temple.

The Harris County Medical Society recently held its meeting in Houston and elected the following officers: President, Dr. Frank L. Barnes, Houston; Vice-President, Dr. Frank S. Glover, Houston; Secretary, Dr. Martha A. Wood, Houston.

Dr. E. H. Cary, Dean of the Baylor Medical College, has been appointed chairman of the committee to prepare a welcome for the Baylor Hospital Unit which is now in France.

The Panhandle Medical Society held its meeting in Amarillo the latter part of March. The following officers were elected: President, J. J. Hannah, Quanah; First Vice-President, Dr. J. R. Wrathem, Amarillo; Second Vice-President, Dr. W. S. Wilson, Canyon; Secretary, Dr. J. J. Crume, Amarillo; Counsellor, Dr. R. S. Killough, Amarillo.

The 45th semi-annual meeting of the South

(Continued on page 36)

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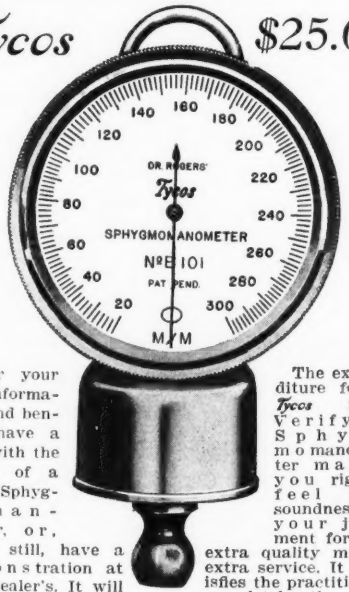

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A sample upon request

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(Continued from page 34)

Texas District Medical Association was held in Houston on April 10. Influenza was the chief topic discussed.

The Dallas Medical Society has resumed its monthly clinics which were suspended for the period of the war.

Dr. W. H. Hargis, who during the war served with the rank of Major in the Medical Corps of the Army, has returned to San Antonio and resumed his practice.

The following physicians have been discharged from the Medical Corps, U. S. Army, and have resumed their practice: Dr. Herbert Caldwell, Corpus Christi; Dr. W. A. Jennings, Chico; Dr. August J. Streit, Marlin; Dr. C. E. Leatherwood, Liberty Hill.

Dr. J. E. Clarke, after an extended service in the U. S. Navy, has been discharged and resumed his practice in Houston.

(Continued on page 38)

CLASSIFIED ADVERTISEMENTS

The Bacteriological Laboratory of G. H. Sherman, M.D., Detroit, Michigan, Manufacturers of Bacteriological Vaccines, is in need of a detail man for the States of Arkansas, Mississippi and Louisiana. In replying give full details as to qualifications, experience, age, salary, etc. Resident of territory mentioned preferred.

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⅝" and ¾"	23 "	4.50 " "	1½"	20 Guage	1.00 each	3 "	17 "	4.00 "
1"	21 "	6.00 " "	2"	19 "	2.00 "	3½"	17 "	5.00 "

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When ordering, it is important to mention the kind of syringe the needles are required to fit.

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Supply this need and fortify your other medication by prescribing KALAK WATER for your patient.

(Continued from 36)

Dr. Newton H. Bowman has been discharged from the Army Service and announces his removal from Beeville to Waco.

Miss Lena Clermont, formerly superintedent of a hospital in Vancouver, B. C., has established a hospital at Ranger.

Governor Hobby has appointed Dr. B. Y. Lacey, Pittsburg, as a member of the State Board of Medical Examiners.

Many smallpox cases have been reported in the State, but Dr. C. W. Goddard, State Health Officer, says that the disease has not reached the form of an epidemic. He urged vaccination throughout the State.

Dr. Byron S. Bruce, Dallas, has been promoted to rank of Major in the Medical Corps. Major Bruce is now in France with the 36th Division.

At a recent meeting of the Jasper-Newton County Medical Society the following officers were elected for 1919: President, Dr. B. A. Swinney, Newton; Secretary-Treasurer, Dr. W. F. McCreight, Kirbyville; Delegate, Dr. U. B. Ogden, Bon Wier; Alternate, Dr. W. E. Trotti, Jasper.

The Johnson County Medical Society held its meeting sometime in January and elected officers as follows: President, Dr. B. H. Turner, Cleburne; Vice-President, Dr. C. L. Edgar, Cleburne; Secretary-Treasurer, Dr. R. L. Harris, Cleburne.

At the meeting of the Milam County Medical Society at Cameron the following officers were elected: President, Dr. J. Z. Young, Buckholts; Vice-President, Dr. A. S. Epperson, Cameron; Secretary-Treasurer, Dr. W. R. Newton, Cameron; Censors, Dr. A. S. Epperson, Dr. J. W. Macune, Davilla, and Dr. I. P. Sessions, Rockdale; Delegate, Dr. G. B. Taylor, Cameron; Alternate, Dr. M. C. Sapp, Cameron.

Dr. T. B. Salder, Corsicana, County Health Officer of Navarro County, has been re-elected.

Deaths

Dr. H. A. Barnwell, Oenaville, aged 61, died in January, of heart didsease.

Dr. B. F. Currie, San Angelo, aged 30, died of tuberculosis on February 3.

Dr. Thomas J. Farmer, Dublin, died suddenly of heart disease on April 18.

Dr. A. R. Kuykendall, Dayton, aged 59, ddied February 27, at a sanatarium in Waco.

Dr. J. E. Thweatt, Houston, aged 65, died February 14.

Dr. W. C. Miller, aged 75, died at his home in Kennard, after an illness of several months.

Dr. D. H. Braman, Victoria, died of apoplexy at his home early in March.

VIRGINIA

Dr. Stuart McGuire, Richmond, who was with Base Hospital No. 45 in France, has been discharged and has resumed his practice.

Physicians and dentists of the Norfolk Medical Society may discontinue free services to the various departments of the city government through the Health Department because of the assessment of a license tax against the professions.

Dr. R. L. Payne, Norfolk, has been appointed Chief Surgeon of the Virginia Railroad.

Captain Paul C. Anderson, of Richmond, has returned from France and expects soon to take up his duties at the Westbrook Sanitarium.

As a token of regard and admiration from certain of his professional friends on the occasion of his fiftieth anniversary in active practice, April 1, 1919, Dr. J. N. Upshur was presented with a handsome silver pitcher and waiter.

Dr. B. F. Noland, of Leesburg, Loudon County, has three sons, all practicing physicians, in the Army Service in France. They are Lieutenant G. A. Noland, Lieutenant Edgar B. Noland, and Lieutenant S. T. Noland.

Dr. James T. Leftwich has removed to Highland Springs, Henrico County, from Lawton, W. Virginia.

Dr. James H. Smith has been discharged from the Service of the Army and has resumed his practice in Richmond.

Dr. Hugh H. Trout, who recently was discharged from the Army Service, has returned to Roanoke and opened the Jefferson Hospital.

Dr. E. C. Cobb, Penola, and Miss Isaline Perkins, Richmond, were recently married.

Dr. Wm. A. Simpson, Richmond, and Miss Susan A. Zollicoffer, Weldon, N. C., married March 1.

The residence and office of Dr. Robert A. Warren, of Hot Springs, was recently destroyed by fire.

Dr. W. L. Peple has been discharged from the Army Service and has resumed his practice in Richmond.

Deaths

Dr. J. C. Wysor died of pneumonia at his home in Clifton Forge February 23.

Dr. J. W. Sloan was found dead in his bed at his home in Richmond on February 26.

Dr. J. B. Moore, aged 84, died at his home at Ayletts March 3, after a short illness.

Dr. Richard H. Sims, aged 77, died at his home at Fitzhugh February 21.

Dr. Stuart T. Ashton died suddenly at his home in Ballston April 3.

WEST VIRGINIA

The Mercer County Medical Society held its regular meeting January 23, that being the first meeting since September, 1918, on account of the epidemic of influenza. The following officers were elected: Dr. J. A. McGuire, Princeton, President; Dr. B. W. Bird, Princeton, First Vice-President; Dr. W. H. St. Clair, Bluefield, Second Vice-President; Dr. J. E Martin, Bluefield, Third Vice-President; Dr. E. H. Thompson. Bluefield, Secretary; Dr. T. E. Peery, Bluefield, Treasurer; Dr. W. W. Morton, Bluefield, Censor; Delegates to State Association, Dr. C. C. Peters, Princeton; Dr. H. G. Steele, Bluefield.

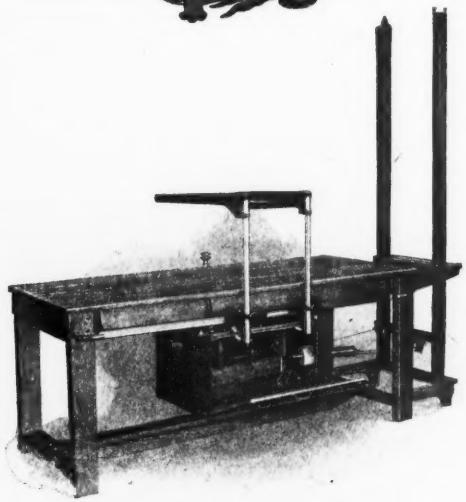
Dr. Paul D. Messman, Welch, has moved his offices to Lexington, Ky.

Dr. B. F. Brugh has moved from Hansford to Montgomery.

Dr. Frank Ikert has been appointed Ohio County Jail Physician.

Deaths

Dr. J. T. Hall, aged 76, formerly of Wheeling, died in Chicago early in April.



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